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Editorials.

NOTIFICATION AND DETECTIVE TESTS.

In a recent editorial we advocated the introduction of a law making the notification of disease in the lower animals compulsory. In continuation of our argument we would now urge that the use of tuberculin and mallein be restricted to the extent that only qualified veterinary surgeons shall be permitted to employ them for detective purposes, or indeed for any purpose whatsover. We trust we shall be able to show that such restriction would be a necessary consequence of the notificatory law which we proposed, and must therefore be kept in view when we discuss the question.

It will be readily admitted that tuberculosis is a very great plague—perhaps the greatest that afflicts our herds. It will be as readily admitted that glanders, though its ravages are not so great, is as acute and deadly as the other disease is far-reaching and overwhelming. A check has within recent years been put upon the ravages of these two plagues by the discovery of tuberculin and mallein and their practical application as detective agents, and the spread of infection has in innumerable cases been stopped at a very early stage of the outbreak. But, as is so often the case, the perverted ingenuity of the rogue has set itself to baffle the skill of the physician, and the consequence has been loss of confidence in the efficacy of the drugs or in the honesty and ability of the surgeon, and a very general feeling of distrust and discomfort has been engendered. The dishonest man setting out on his blackguardly career adopts a variety of methods to outwit the honest surgeon. In some cases, knowing that the cattle which he wishes to sell will be at once subjected to the tuberculin test, he has the drug administered to them shortly before the sale; the consequence is that when it is administered a second time the animals, however much diseased, do not react, the temperature remains normal, there is no appearance of tuberculosis, and a misleading certificate is granted —in perfect good faith, of course—by the veterinary surgeon who has tested the animals. These animals may be pedigree stock intended for shipment to one of our colonies or to some distant country, perhaps the Argentine, which may have paid a high price

for them, and which feels bitterly disappointed and deeply disgusted when tuberculosis makes its appearance a month or two after arrival of the prize bull or cow. Or the disease may remain latent for a considerable time, and only show itself when the probability is that it has been transmitted to the other animals in contact, But in mentioning the irregular administration of tuberculin we have not exhausted the resources of the unscrupulous breeder or dealer. We have heard of cases in which the seller or one of his underlings crept quietly into the building in which the cattle were being tested, and surreptitiously administered an enema of cold water about the tenth hour after the injection, the result being that the temperature of the cattle was falsified and the test rendered quite useless. Other men, still less influenced by any feeling of honour, administer morphia, opium, or aconite—again, of course, surreptitiously—with the same intention of checking the rise of temperature which betrays the presence of the disease.

The remedy for such abuses is clearly the restriction of the sale of tuberculin and, of course, of mallein. Let it be understood that the authorities—for example, the Board of Agriculture—will sell only to qualified veterinary surgeons, or perhaps only to a restricted number of these, whose names shall be duly registered. Let it be understood that these surgeons must report to the Board all cases in which they have used tuberculin or mallein, giving minute details of the number and ownership of the animals, place, time, and results. It will then be impossible to deceive the purchaser, at any rate if the surgeon is a competent and resolute man. He comes, let us say, to Farmer A., or even to Squire B., and requests that he may see the animals which are to be sold. He states that he is instructed by an Australian Syndicate, by a German nobleman, or by the Argentine Government to test the cattle, and that he has to report to them as well as to the British Government. He asks who is the ordinary consulting veterinary surgeon of the seller, and learns that it is Mr. Smith of R. Perhaps he may send for that gentleman and question him as to his having ever tested the cattle, or he may send him a telegram, or he may inquire at the office of the Board if Mr. Smith has obtained any tuberculin lately. In the presence of strict regulations Mr. Smith is bound to answer the visiting surgeon's questions—there is no escape and no evasion is possible. As the law at present stands, a surgeon dare not give information as to the presence of disease, unless compelled by a judge : under our proposed law he would not be able to avoid giving information. In any case, if suspicion existed, the visiting surgeon could get the fullest information from the Board of Agriculture. No qualified or registered practitioner would ever dream of trying to evade the law, as any neglect to report the use of mallein or tuberculin to head-qnarters would lead to a very severe reprimand and perhaps to disqualification, if not to criminal proceedings. Having thus satisfied himself that no other veteri-

nary surgeon had recently tested the animals, and knowing that no layman could obtain the drug, the visiting surgeon proceeds to shut the animals up in a separate building provided with secure locks, of which he alone holds the keys—he may even carry mechanical apparatus provided by the Board for the purpose—and then he injects the tuberculin in presence of an assistant, whom he may, for the sake of additional security, shut up along with the cattle. He thus avoids and renders impossible all tampering with the animals on the part of malevolent laymen, so that he no longer fears the cold water enema. Next morning the temperatures are taken, the surgeon reports to his clients and to the Board, minute records are taken and carefully preserved, and everybody is satisfied.

It only remains for us to discuss the possibility of the unscrupulous layman obtaining tuberculin or mallein from places abroad, but as there are, we think, only three countries where these drugs are prepared (France, Germany, and the United States), and as the drugs are not industrial products, but are prepared only at scientific establishments like the Pasteur Institute, there ought to be no difficulty in arranging with the French, German, and American Governments for the restriction of their sale. Foreign veterinary surgeons are as honourable as we are, and, besides, they might be bound down, as we have proposed, to give a minute and detailed account of every drop of tuberculin and mallein which they use. In view of the importance of an honourable understanding in all transactions connected with the sale of cattle, we think we have made out a perfectly good case for restriction.

VETERINARY EDUCATION AND THE UNIVERSITIES.

READERS of the VETERINARY JOURNAL will note with pleasure that the Principal of Aberdeen University spoke in quite a cordial tone about the proposed extension of our educational course in the kindly remarks which he made after my address. The learned Principal sees quite clearly that any scheme of university education for our students must be general and not parochial, and his support is of enormous value. It must now be quite evident to the educational as it is to the veterinary world, that the original narrow scheme proposed to the Edinburgh authorities would have been little else than ridiculous. I have no doubt whatever that so sagacious a man as Sir William Turner, of Edinburgh University, will have had no difficulty in piercing the flimsy pretexts, which originally obscured a sound enough proposal to put veterinary education on a secure basis, and that the various colleges will get the benefit of his statesmanlike wisdom and skill when a definite scheme is brought before him, and one which is intended to help the great cause of veterinary training, and not merely bolster up a single decrepit, if venerable, institution.

I have the happiness of being able to announce to my readers that a resolution to the following effect was recently passed by the Senate of the Royal University of Ireland :—" The Senate of the Royal University of Ireland believes that the veterinary profession is worthy of University recognition, and it is prepared to grant degrees of Bachelor and Doctor of Veterinary Medicine. These degrees will be open only to those who are members of the Royal College of Veterinary Surgeons. It is not intended that any degree shall have the value of a licence to practise ; its purpose is merely to give University recognition and an academic standing to the veterinary profession." I further learn, through the courtesy of my learned friend Principal Mettam, of Dublin, that " the members of the Senate were unanimous and very flattering indeed in their references to the profession." The whole matter has been referred to the Standing Committee of the Royal University. Such facts are very encouraging, and ought to nerve us to further and sustained efforts. Let every veterinary surgeon in the country do his best to help on the good work, and success will crown our efforts. A university degree need not make us better surgeons, but it will compel respect to our utterances and give us more social influence. " The King's stamp does not give value to the piece of gold," said the cynic. " No," said the wise man, " but it gives it currency." W. O. W.

Original Papers.

THE TREATMENT OF TETANUS.[1]

BY PRINCIPAL METTAM, B.SC., M.R.C.V.S.

THE discovery of the organism of tetanus marks an epoch in the treatment of tetanus, as the discovery of the bacillus tuberculosis initiated a more profound conception of the latter disease and brought us out of the slough of despond on to more hopeful ground, with bright promise for the future that if the disease is not remedial it is at the least preventible. Tuberculosis interests us as veterinarians not only because it is a disease but because it is a scourge of the whole animal creation, capable of being transmitted to the most divergent species and very common among the animals more particularly committed to our care. If tetanus is not so common, if there are certain species immune or only infected with difficulty, it is none the less of supreme interest to us, as the most valuable animal to the use of man, the horse, is particularly susceptible to infection, even more so than man himself. Anything, therefore, if only an hypothesis, which can assist in pointing out the lines to be followed in successfully combating the disease must be carefully considered, and, if necessary, tested. Much treatment is empirical, many of our most successful cases have recovered after treatment which could not be scientifically upheld, and careful consideration of such treatment will often indicate the way to a rational method. Out of darkness there sometimes comes light.

[1] Read at a quarterly meeting of the Lancashire Veterinary Medical Association on June 2nd.

I do not purpose in this short paper to discuss the symptoms of tetanus nor the treatment recommended before the true cause was discovered. Briefly, I wish to discuss the cause, the means whereby the poison is spread, how the dissemination of the poison may be prevented, and how the poison may be neutralised out of the body, and perhaps in the body itself. I hope you will not expect a full discussion on all that has been said and written on this subject of tetanus; it would be simply impossible for me even to indicate to you the various opinions held, experiments made, and generally work done on this question, time would not allow.

Tetanus is the disease we recognise following the absorption of the tetanus toxin, whether the toxin is formed by the germ of the disease in the body, or whether the toxin is obtained from cultures of the incubated organism and then injected into the body. The toxin operates upon the higher nerve centres, upon the nerve cells in the grey matter of brain and cord, or more accurately upon the neurons, and as a result we observe the muscular contractions involving certain groups of muscles or portions of the body. The organism of tetanus is an anærobe, oxygen is fatal to it in its bacillary form, and hence tetanus does not commonly follow large surface wounds of no great depth, but rather small wounds of uncertain depth with recesses practically shut off from the air. It frequently appears when a wound is cicatrising and for probably the same reason—that now the oxygen, harmful to the development of the germ, is shut out from the wound.

We scarcely know the incubative period of tetanus, because the disease is not recognised till the well-known muscular contractions make their appearance. We are not able to say how long it is necessary for the organism to be in the wound before the symptoms appear, and it is more than likely that the incubative period lies between wide limits and that it will vary with different animals. It is also probable that it will vary with the seat of the wound and the distance of that from the nerve centres.

The organism of tetanus remains in the near neighbourhood of the wound which is always present in a case of tetanus. The old subdivision of tetanus into cases idiopathic and cases traumatic no longer holds. Every case of tetanus is due to infection through a wound, though the wound may be so small as to be undiscoverable, or perhaps in a region which we cannot examine, as the alimentary tract or the uterus, &c. The cases of *medical* tetanus as distinguished from surgical or traumatic are doubtless of such a nature. The organism of tetanus has a ubiquitous distribution, it is found in soil, in dust, in fæces, of the horse especially. It is a very common saprophyte in the alimentary canal of animals. When one reflects for a moment upon the number of intestinal animal parasites a horse may carry and the serious lesions which these parasites may produce in the mucous membrane of the gut, one ceases to wonder at the fact that septicæmic affections are so common—rather to marvel that they are not more so. It is very probable that anthrax, blackquarter, and tetanus frequently occur through entrance of the organism into the body by way of an intestinal wound. Because we cannot discover a wound we must not conclude that one does not exist. We must remember that a wound is a solution of continuity, and it may be exceedingly small.

Having gained entrance to a wound, the tetanus organism, according to circumstances, may cause no harm, or its presence may result in disease

How are these different conditions brought about? We have already seen that oxygen of the atmosphere is harmful to the organism, but there are in the body potent factors which prevent any further development of the bacillus, and these are the phagocytes. The phagocytes must, however, act promptly and without hindrance if the tetanus organisms are to be annihilated. Unfortunately this can rarely be the case. If the tetanus organism is to be rendered harmless it must be before it has produced any poison, the poison is fatal to the phagocytes as it is to the body of which they are a part, and before the tetanus bacillus is ready to form the toxin the phagocytes are too busy dealing with other organisms that have come in along with the germ of tetanus. Very interesting experiments have been made to elucidate the *rôle* played by phagocytes and the organism of tetanus. If a quantity of the tetanus bacilli is washed free of the toxin they form, and is then injected into a susceptible animal, the phagocytes will seize the bacilli and render them harmless—will digest them, in fact—and the animal will not suffer from the injection. If any substance that will keep the phagocytes in check is injected at the same time as the organisms then tetanus will follow, owing to the organisms having free play to form the toxin. Similarly, if spores of the organism are used, washed clean of all toxin, and injected into an animal, the animal will show no signs of tetanus if there is nothing to prevent the free and untrammelled work of the phagocytes. If the spores are protected from the onslaught of the phagocytes, as by including in paper, then tetanus follows so soon as the spores have developed into bacilli and have had time to form toxin. Similarly, if pure toxin filtered free from bacilli is injected, tetanus follows more or less rapidly, and save for its rapid development cannot be differentiated from clinical tetanus. Tetanus, therefore, is an intoxication produced by the tetanus bacillus, and for its development the tetanus bacillus need not be present in the body, the toxin may be obtained from a culture and injected into the body.

The tetanus bacillus remains localised at the site of the wound; here the toxin is produced, and from the wound where the tetanus poison is elaborated it is distributed over the body. But how is the poison distributed? How is it conveyed to the central nervous system? By the blood stream, by the lymph stream, or how? Recently most interesting and most important researches to this end have been made at the Pasteur Institute in Paris, and it has been shown that the poison travels along the nerve trunks to the centres. The poison follows the most direct route to reach the highly developed cell body of the neuron. What acumen and intelligent foresight did our professional predecessors display in recommending a further amputation of the tail in tetanus following docking!—recommending, in other words, removal of the fountain of the mischief. If the distributory tract is along the course of the nerves from the manufactory at the wound, would it not be worth the experiment to perform neurectomy, say, of the plantar nerves in tetanus following a prick, or picked-up nail. I know that such a course is recommended, as in Law's Veterinary Medicine, for instance, but I cannot call to mind a case on record where it has been done.

The tetanus toxin, which is allied to diastase, is of great power. Two drops of pure toxin is sufficient to kill a horse with all the symptoms of acute tetanus, and this toxin has a peculiar predilection for nervous matter. If tetanus toxin is mixed with brain matter pounded down in a mortar it is

found that the toxin is fixed by the nerve cells and neutralised, so much so that a fatal dose so treated no longer is able to produce fatal results on injection. This peculiar property is worth noting, especially as the intracranial injection of anti-tetanic serum has been utilised in the treatment of tetanus both in man and animals. This fixing of the tetanus toxin by the nerve cells according to Metchnikoff, or neutralisation according to Wasserman and Takuki, explains why it is that tetanus toxin injected into an animal fails to be discovered during the incubative period of the disease, the excretions not containing it. According to Courmont and Doyen neurine and hydrochlorate of tetaine both neutralise the toxin.

Injected under the skin in moderate doses the toxin sets up tetanus after a variable period, according to the animal: the dog in from 36 to 48 hours, ass 4 days, horse 5 days. In man the incubation period is 4 days, as Nicholas whilst working in Courmont's laboratory unwittingly showed. He had the misfortune to wound himself in the thumb with a hypodermic needle moist with tetanus toxin. Tetanus developed in 4 days, although the dose of toxin can scarcely be calculated.

We thus see that the toxin is exceedingly potent, that it is formed at the wound, that it spreads by the nerve trunks, its direction being centripetal, and that it is fixed or united with the nerve cells or cell bodies of the neurons.

The lesions observed are not satisfactory even in the central nervous system, and in this tetanus corresponds with rabies, where also there are as yet not found indisputable changes as the result of the infection.

In 1890 attempts were made simultaneously to obtain what we now call anti-diptheritic and anti-tetanic serum. Kitasato, who first isolated the tetanus bacillus in pure culture, and Behring were associated in the work. A few years previously Kund Faber had attempted to vaccinate but failed. Kitasato and Behring immunised rabbits by injecting cultures of the organism followed by injections of trichloride of iodine. This was not satisfactory, and extracts of thymus were employed instead. Then Vaillard attenuated the toxin obtained by filtering, by subjecting to heat, and injecting doses of this heated less and less until the active toxin was given. A year later, in 1892, Roux and Vaillard, working together, found that by adding a solution of iodine to the toxin they could dispense with the heating, and soon large quantities of toxin *plus* iodine solution were injected into horses without danger, and with the best results of producing rapidly an antitoxic serum. Following the demonstration of antitoxin in the blood of animals rendered immune, the serum of such immunised animals was examined to determine if it could save an animal from a lethal dose of toxin, and it was stated that the experimenters had been successful. This, however, was a mistake. Anti-tetanic serum is not anti-tetanic once the symptoms are developed. It can only claim to be anti-tetanic when used prior to the development of the disease—used previous to operations or immediately on the receipt of an injury probably containing tetanic material. The reason why anti-tetanic serum is not the success anticipated is that generally the damage is done before it is used: that the symptoms of the disease indicate that the toxin has already reached the nerve centres, and that the muscular contractions are the mere manifestations of an intense neuron poisoning having occurred. The exhibition of anti-tetanic serum after the appearance of the symptoms fails, in my opinion, because the poison is in great part fixed, or is in such a condition that the antitoxin is

not able to combine with it, that it is too diluted by the time it reaches the affected neurons, having probably traversed the entire body before reaching the place where it was wanted, and that it is eliminated without coming in contact with the affected centres at all. It was probably for this reason that injection of the anti-tetanic serum directly into the brain was recommended, and certainly Roux's and Borrel's results in guinea-pigs seemed to warrant a trial. To Courmont and Doyan's knowledge up to 1899, 24 human beings have been so treated, with 75 per cent. of deaths, a slightly higher percentage than under ordinary conditions.[1] This of course need not be taken as showing its inefficacy, some other factors may not have been taken sufficiently into account. I mean not that one should choose one's cases so that the results should invariably be good, but that the treatment should have a chance and not be expected to save those that are moribund, and some of the cases were very acute.

This treatment, however, goes to show what I have mentioned above as to the toxin being fixed by the nerve cells and probably being now non-receptive or not able to combine with the antitoxin. Moreover, the antitoxin may be limited as to its scope of action when injected into the cerebral mass, or even into the internal ventricles, and not be able to reach some of the centres situated in the medulla.

If the toxin is only loosely attached to the nerve cell and not fixed, it may be possible to neutralise it by flooding the body with some agent which even in very dilute solution is able to neutralise the poison *in vitro*. The operation may be comparable to washing the body with artificial serum, as is recommended in some forms of jaundice, as that in dogs due to the presence of an intracorpuscular parasite. Only in cases of tetanus the patient is so excitable and in a state of high tension, his muscles are so rigid and the skin usually so tightly drawn, that large hypodermic injections cannot readily be administered. Still, as we have a very serious malady to combat, and as it will not admit of mere palliative remedies, if we desire to save our patient we may as well get into grips with the case at once.

And what are we to do? I have already mentioned that anti-tetanic serum as a remedial agent is not to be recommended, whatever its value, and it is great, as a preventive may be. Cases are on record of success in treatment when using anti-tetanic serum. There is nothing in that; the animals would probably have recovered without any treatment. I do not say this in a deprecatory spirit or to make a mere random statement, like one wise after the event, seeming to belittle what has apparently been effectual, but from sincere conviction that the effect of the antitoxin itself could not possibly have relieved the condition.

Recently Grams, writing in the *Berliner Thierärztliche Wochenschrift* for April 9, 1903, upon the treatment of tetanus in general, sums up his conclusions as follows:—Tetanus always follows an injury, the stroke of a whip producing a superficial erosion may be the port of entry of the infection. The first signs of tetanus appear on the fourteenth day, sometimes before, rarely afterwards. Subacute cases of tetanus alone are curable; by subacute cases is meant those forms where the disease shows itself by groups of muscles becoming successively involved and where trismus is only slight. The average duration of subacute tetanus is thirty days. Animals should not be slung, but a good bed is always indicated. All applications to the

[1] Moschcowitz records 48 cases treated intracerebrally, 23 recovered, 25 died. In 290 cases in man treated subcutaneously 173 recovered.

surface of the body should be withheld. Grooming operations should be entirely suspended, and the patient should be kept quiet. Cases of acute tetanus should be isolated, whilst subacute cases which continue to feed may be kept in the common stable. Iodide of sodium may be administered by intratracheal injection, by the mouth, by injection into rectum or subcutaneously. The latter method may set up a local inflammation. The dose of the iodide depends upon the symptoms and idiosyncrasies of the patient. Sufficient has been given when the patient continues to sweat under his sheeting. Grams uses 4 to 10 grammes (60 to 150 grains) daily; often he uses 5 grammes of the iodide dissolved in 30 grammes of water. He is of the opinion that iodide of sodium improves the general condition in subacute cases, and he recommended the salt.

Generally we may endorse his opinions, but I think he has not laid sufficient stress upon the treatment of the wound where infection has occurred. I believe a thorough and repeated disinfection of the wound with hot antiseptic solutions is an admirable adjuvant to systemic treatment, and in cases of tetanus following foot injuries the wound must be thoroughly cleansed and if necessary exposed to a thorough and conscientious irrigation. There is no doubt as to the entire mischief being at the wound, and in my opinion the first duty of the practitioner in a case of tetanus is to find the original wound and ensure that it remains quite aseptic. The continued pouring into the system of the tetanus toxin must be prevented, and the only way to check this is to remove the cause "root and branch." Then again I do not think we all agree that slinging is valueless, indeed we know that suspension of the patient often prevents him getting down, and if a patient does get down we know what distress follows the prolonged struggles and efforts to rise. Even if slinging is not considered necessary, I think a bedding of a short material, as sawdust or wheat chaff, is preferable to straw. These are points, however, which have to be considered as applying to individual cases, and different men hold different views, following their own experience. It is rather to the treatment of the malady than the patient to which I write. Prior to the appearance of Grams paper, which I quoted from above as it is annotated in the *Revue Générale de Méd. Vétérinaire*, a case entered the College Hospital of the Royal Veterinary College of Ireland suffering from tetanus. I am indebted to Mr. Magee, M.R.C.V.S., the hospital surgeon, for the facts of the case. Most of the injections I made myself.

Jan. 31, 1903.—Bay gelding sent into hospital by Mr. R. B. Freeman, M.R.C.V.S., Dublin, suffering from tetanus.

History.—Had fallen about a week previously and received a bruise over the left eye and a punctured wound on outside of left fore-leg (fore-arm).

State on examination.—Stiff all round. Much worse behind and walked on toes of hind feet. When head raised the membrana nictitans extended. Slight trismus, but animal able to take soft food. Tail extended and trembling. Temp. 102° F.

Treatment.—Animal was put into slings, the box was darkened and the wound was irrigated with hot antiseptic solution. The wound over eye had an ointment applied to it That evening he received subcutaneously 50 c.c. of Lugol's solution of iodine and iodide of potassium in water. He also received sulph. magnesia, sodium bicarb. and pot. iodide in his drinking water daily.

Feb. 1.—Slightly more use of the hind quarters. He received 100 c.c. of Lugol in the morning and 100 c.c. in the evening. Wounds were dressed.

Feb. 2.—Tail not so stiff. The membrana nictitans more prominent. Injections as before.

Feb. 3.—Condition as yesterday. Received 150 c.c. of Lugol morning and evening subcutaneously.

Feb. 4.—Condition as before. Same injections.

Feb. 5.—Temp. 104° F. Respirations more hurried. Easily excited. Received in drinking water two drams of pot. iodid. and an ounce chloral hydrate an hour previous to the morning injection. Received morning and evening an injection of 150 c.c. Lugol's solution.

Feb. 6.—Not so excitable. Respirations still hurried. Injections.

Feb. 7.—General improvement now marked. Received 300 c.c. of Lugol subcutaneously daily until Feb. 10th, when, all symptoms having disappeared, treatment was stopped.

I do not claim that this single case which we have treated with the iodine solution is sufficient to warrant all other methods being condemned—that is not my intention. I merely wish to draw attention to the fact that Lugol's solution is capable of rendering innocuous many lethal doses of tetanus toxin when the toxin is *in vitro*, and that it is probable that the same solution may neutralise the poison when it is in the body and exerting its harmful influence upon the nerve centres.

DISCUSSION.

Mr. Woods, in opening the discussion, said the term idiopathic tetanus was a misnomer. The discovery of the method of spread of the disease seemed to him to be one of the most valuable of recent discoveries with regard to tetanus. He believed it was now settled that tetanus, so to speak, crawled up the nerves, and that it was not conveyed by the lymphatics. If the disease followed docking, redocking was a scientific treatment. Neurectomy, or the cutting out of a piece of the nerve in cases of tetanus following a pricked foot was distinctly scientific treatment, though he had never seen the operation performed. He had a peculiar experience, which perhaps many might not be able to verify, of a horse having had tetanus twice, and he was prepared to say that the first attack did not prevent a second attack, which killed the animal in three days. The modern treatment of tetanus he believed resolved itself into two parts, the injection of antitetanic serum and the injection of a solution of iodine. He was of opinion that the anti-tetanic serum was a preventive but not a curative agent. In subacute tetanus in which the muscles of respiration were not affected he firmly believed that the injection of anti-tetanic serum was of value and shortened the period of recovery, although he had no scientific reason for saying so, except that he knew his success had been greater since his adoption of the anti-tetanic serum. In those cases which were going to die in two or three days the serum was of no use. His experience of iodine was that it was of no value whatever. As to slinging, there was no hard and fast rule, in many cases it was of value, while in others it was of no use. After a case of tetanus it was advisable to disinfect the slings, as he had seen tetanus follow other cases of tetanus through the use of the same slings. He disbelieved in the efficacy of the dark box in tetanus and

had therefore abolished it with beneficial results. He had come to the conclusion that the more sunlight that could be got on to a case of tetanus the better.

Mr. SUMNER said he had found anti-tetanic serum of no use, and that it had invariably aggravated the disease. After recognising the tetanus bacillus he was led to use iodine on account of its being very obnoxious to all bacterial growths. In acute cases of tetanus he was of opinion that treatment of any kind was of no avail, but in subacute cases, if they were left alone and with rational treatment, they usually recovered. He would like to know from the Professor how a horse suffering from tetanus became a communicating centre of infection to others.

Mr. LLOYD pointed out that, having under his care close upon 200 horses which had to go on to rubbish tips, he had a considerable experience in the treatment of wounds, especially foot wounds. Recognising that the animals got infection from the wounds, he instructed the smiths that whenever they found wounds, especially in the foot, to thoroughly pare the horn until the wound bled freely, and then place the foot into a wooden tub of hot water, the hot water being kept on for twenty minutes. This treat-treatment he had found of very great effect. After taking the foot out of the water it was treated with an antiseptic solution. The tetanus cases previously were very frequent. In subacute cases the animal was put into a dark box, slung, and the ordinary treatment adopted. There was, however, no trismus. Speaking of idiopathic cases of tetanus they were all agreed that the word itself was out of date.

Mr. TAYLOR agreed with the other speakers that the so-called subacute cases of tetanus recovered notwithstanding any treatment, and that there were others in which remedial measures were not the slightest use. With regard to slinging there were cases which should be slung, while in others it was inadvisable to do so. If slinging unduly excited the animal it ought to be discontinued, but if not, it was beneficial. While he followed with much appreciation Professor Mettam's tracing of the invasion of the system by the bacillus of tetanus, he would have been glad had he traced the onward course of the bacillus or toxin after the death of the animal itself, and why or in what form did the animal, which became defunct from an attack of tetanus, become an agent of danger to remaining live animals. Mr. Taylor concluded by thanking the Professor for his very interesting address.

Mr. HOPKIN doubted whether sufficient was known of the life-history of tetanus, or where it came from. All he knew of the disease was that scientists had got hold of the bacilli from an infected case and made cultivations. As to the treatment, it could be summed up shortly—mild cases generally recovered, whereas serious cases did not. He agreed with Mr. Woods as to the beneficial effects of allowing the animal infected with tetanus to have plenty of sunlight.

Mr. FAULKNER complimented Professor Mettam on his lucid and interesting paper upon such an important subject. As to slinging, he believed, as the result of his experience, that there was no rule, but it was naturally a question of judgment and close observation. It was somewhat difficult to accurately judge whether an animal would or would not stand fourteen days or be a suitable subject put into slings. With respect to the cases quoted as recovering under the effects of sunlight and being turned out to grass, he would like to know whether there was any degree of trismus. In Charleston, South Carolina, where he visited last year on a

holiday, there were numerous cases of punctured feet in mules, and the practice there was to immediately antiseptically cleanse and treat the animal for a punctured wound, administer anti-tetanic serum, and not to wait for the advent of tetanus. This, he was told, was a great preventive of tetanus and quite an every-day practice. Not only did he agree with what had been said about the frequent non-success of the treatment attending very acute cases of tetanus, but knew how pitiable it was to see the distress of the animal and yet be unable to relieve its suffering. The subacute cases, of course, invariably recovered with rational treatment and favourable surroundings. In tetanus cases where the breathing was difficult, for years past he had been in the habit of administering oxygen, and in many instances this had been the means of tiding the animal over a critical period, but he should like to have the Professor's opinion upon the matter. It seemed peculiar that in his (Mr. Faulkner) practice a period of from twelve to eighteen months would elapse without there being a single case of tetanus, yet when a case occurred there would be quite a run of them, although the animals came from districts far apart and had different surroundings.

Mr. PACKMAN inquired whether injecting a liquid form of oxygen would have a beneficial result in tetanus cases. He was with all the speakers in the opinion that acute cases scarcely ever recovered, while subacute cases would recover by leaving them alone.

Mr. GIBLIN instanced a case which came under his observation when he was assistant to Mr. Carter, of Burnley. The horse was brought up from grass suffering from tetanus. No wound could be found, but the gait of the animal was a most peculiar action of an exaggerated stringhalt, both hind legs hitting the abdomen at every step the animal took. There was, however, no trismus, though this developed shortly after. In the case of tetanus resulting from punctured feet the Professor stated that it passed along the trunk of the nerve. Now in passing along the trunk of the nerve it must either pass by the blood-vessels or the lymphatics. With regard to the contamination of the slings he would henceforth have them thoroughly washed and dressed.

Mr. WOLSTENHOLME thanked Professor Mettam for the interesting and instructive paper he had given to them, and remarked that he scarcely remembered a paper in connection with the Lancashire Society in which a man's earlier studies had to be drawn upon so much to fully appreciate the paper—subjects such as chemistry, anatomy, and physiology.

In alluding to the case of Mr. Woods' in which a colt had had two attacks of tetanus, Mr. Wolstenholme thought that this quite bore out the experience gained by experiment that the immunity given by the antitoxin lasted for a short period only. Referring to those cases which occurred without any visible external wound, the speaker thought that it was not difficult to understand how this and other bacterial diseases might arise by the inhalation and ingestion of spores. As to the greater prevalence of tetanus in certain districts, and that at varying times a greater number of cases were seen in the same district, this was to be accounted for by the fact that in certain soils the bacilli were more abundant, and that at times the soil became dust and was more extensively distributed than at others.

Mr. GARNETT remarked that all the speakers appeared self-confident that they were able to diagnose without difficulty every case of tetanus.

He, however, had very grave doubts about that. He thought that as time went on a more accurate diagnosis of the diseases of animals would be made than at present. It was rather strange that this point had not been raised, but in those cases both in cattle and in horses the various symptoms which were observable required to be analysed and proved in each case.

The PRESIDENT said he had had considerable experience with tetanus which he had seen in the equine, bovine, and ovine species. In cattle, with few exceptions, it always followed castration. In the donkey as well as the sheep it had been introduced through wounds. Most of the cases in the human species were, he thought, the result of accidents on the roads. Acute cases should not be looked upon as always hopeless, especially from docking. The best plan was to get at the surface of the wound and cauterise it, or redock the animal, and with rational treatment and favourable surroundings there was every hope of recovery. If the animal could stand, dispense with slings, but if not, adopt them.

Professor METTAM, in reply, expressed his firm opinion that there was no idiopathic tetanus. Mr. Woods' case of an animal having a second attack of tetanus, which proved fatal, confirmed what was known already, that the immunity given to an animal from repeated injections of anti-tetanic serum was speedily lost. With Mr. Woods he believed that it was quite possible for tetanus to follow other cases of tetanus through the use of the same slings. As to the fate of the toxin after the animal died, he supposed it underwent decomposition. As to the practice in Carolina of using anti-tetanic serum for punctured wounds, it was evident that the people out there found that the anti-tetanic serum was of more value as a preventive than a remedial agent. With regard to the use of oxygen during the crisis of the tetanus, he presumed that the virtue was to be found in relieving the animal of a certain amount of dyspnœa when the respiratory muscles were involved. It was difficult to explain why certain diseases appeared at certain times, but his experience of veterinary practice was that it never rained but it poured.

Mr. WOODS proposed a hearty vote of thanks to Professor Mettam for his able and instructive paper.

The PRESIDENT seconded, and Mr. Faulkner having supported, the proposition was carried with unanimity.

A vote of thanks was accorded to the President for his conduct in the chair, the resolution being moved by Mr. Faulkner, and seconded by Mr. Packman.

THE DIAGNOSIS OF HIND-LEG LAMENESS.[1]

BY W. HUNTING, F.R.C.V.S.

MR. HUNTING said he almost felt that he was appearing before them under false pretences. When Mr. Standley wrote and asked him whether he would give a paper, he answered somewhat hastily that he would do so. Now, having made a promise, a man ought to keep it. He did not. The Chairman seemed to think, however—though it was a question whether he

[1] Read at a Meeting of the Eastern Counties Veterinary Medical Society on July 2nd, 1903.

was expressing the feelings of the meeting quite correctly—that they would accept with a simple and child-like faith anything he (Mr. Hunting) might select and anything he might say. Going further still, the Chairman even promised him a vote of thanks. He wished Mr. Pollock had not done that, for he was not at all sure that he wouldn't get something very different. (Laughter). When he tried to find a subject, he soon found out two things—one, that there were a number of subjects which he had already used up, the other that there were a number of subjects about which he knew very little. Having rather a preference for something to do with lameness, he thought of taking some one form of lameness to talk about. But he could not make a selection. Then he thought of a paper on lameness generally, but finally came to the conclusion that that would be too extensive. He therefore limited the subject to "The difficulties of diagnosing some hind-leg lamenesses."

He did not know whether any of the members present had any difficulty in diagnosing lameness. He confessed that he had. He sometimes came across cases which were something like that form of blindness described by the famous Abernethy, as a disease in which the patient saw nothing and the physician nothing. (Laughter). He could see that a horse was lame, but where it was lame he could not for the life of him tell.

There were many things which helped them to form a correct diagnosis —the age and history of the case, for instance, the kind of lameness, its continuance, its recurrence, its intermittence. They had been used to rely a good deal, too, upon peculiarities of action. He had almost given this up as an aid in the diagnosis of lameness. That might seem at first to be rather a startling thing to say, but let them call this fact to mind—after they had examined a horse and found that he was lame somewhere, the very next thing they did was to have his shoe off. That was a significant action. Why did they take the horse's shoe off? Why did they not remain content with having diagnosed the lameness by the action? He was afraid there were many hind-leg lamenesses that could be no more differentiated by action than could those arising from, say, a fractured pelvis or a sand-crack at the toe. The truth was that the significance of action had been very much over-valued, except in some few cases which he would say a word about as he went on. A diagnosis was made pretty easily, of course, when they found a good big swelling, or a very painful place, or some definite deformity; but when there were none of these indications, diagnosis became a difficulty. Sometimes, moreover, they would find a deformity which had nothing to do with the lameness. Perhaps a good illustration of that was a large spavin, so clear and distinct, that as a stableman would say, one could hang his hat on it. When lameness had been ascribed to this cause, it was awkward to find on post-mortem that it was due to a fracture of one of the pelvic bones. Diagnosis from what they could all see—positive diagnosis—was what all liked, but it was rare. Nearly ever case of lameness was a logical problem in which a number of facts had to be compared and balanced. Diagnosis often depended on a process of exclusion. They exhausted the list of what it was not, and sometimes arrived at a correct diagnosis as to what it was. Then there was another method—not advocated in the text-books—which he would call diagnosis by evasion.—(Laughter.) Under this system you fixed upon some spot, and said something—taking good care not to be too definite—and waited a day or two. An old friend of his used to say, "When you

get a queer case of lameness, go into the yard, and have a look, but let the assistant attend to it. (Laughter.) That gives you a day or two to think it over. Then you go yourself and have another look; in this way you will get a week in which to think about it, and of course, if you can't tell what it is in a week, the chances are that you won't be able to do it in a month." Now he did not say this, nor tell this little story with the idea of reflecting either upon their morality or their intelligence. Not a bit. They had to live, as well as to diagnose cases, and the British public had arrived at the stage at which they thought that a doctor should diagnose a case, give it a name, and give a bottle of stuff, right away. As a matter of fact, it was not very difficult to give the thing a name, and anybody could supply the bottle of stuff, but the real diagnosis was not always made. They did not want to deceive the public, but they did not want the public to think they were worse than other professional men because they could not give a complaint a name at once. The public did not know, as they did, that the man who "gave it a name" was generally wrong—that was, when he did it right away. These were some of the considerations which led him to take the subject he had chosen, for there were a number of hind-leg lamenesses which he really knew very little about, and, if they only confined themselves to the range of diagnosis, the members present might possibly contribute some of that knowledge which he was deficient in.

First of all, then, it was an initial step towards diagnosis to find out which leg the horse was lame on. This was not easily done in all cases. Having got the leg all right, the next thing to do was to find out the seat of the lameness. Let them begin at the foot. Any man, as a rule, thought he could spot a foot lameness. The horse did not put any weight on the foot affected; he rested it, would hold it up in cases where the pain was intense. All these things they would find in foot lameness, but the unfortunate thing was that a horse would do exactly the same when suffering from some other form of lameness. As he had said just before, was there a man who could tell from action alone, without going too near a horse, the difference between lameness induced by a bad sand-crack, and the lameness induced by a fractured pelvis? He did not think there was any distinctive action which would enable them to distinguish between the two causes.

Then, unfortunately, foot lameness might exist but give no local sign whatever. There was a history in the *Veterinary Journal* of a horse at Aldershot which had some peculiar lameness. He was seen by all the veterinary surgeons there, and they acknowledged the difficulty of the case by asking any other veterinary surgeon who happened to visit the camp to examine the case and diagnose on it. The number of professional gentlemen who did so ran into "the teens" he believed, and the beauty of it was that they pretty well all gave a different diagnosis, from affections ranging from the quarter to the foot. What was their surprise when on post-mortem was revealed a fractured navicular bone. He had a very distinct recollection himself of seeing a horse that had been fired on the hock that had a spavin as big as an egg. The man who treated it had to find out at the beginning what was the matter, but the horse was as lame three months after the firing as it was to start with, which naturally suggested that it might not be a hock lameness.

An aid to diagnosis that he used was an injection of cocaine applied to

the place believed to be affected, or over the nerves above the suspected part. This often showed whether it was the right part or not. Often he had injected a couple of grains of cocaine over the course of the plantar nerves at the seat of neurectomy, and the horse went sound in five minutes, but was as lame as ever in another half-hour. This showed that the lameness was lower down than the injected spot.

In another case a friend of his had a client who came and said—"I have got a horse that has been lame for some time, and I don't know whether you can do anything for him; he has been blistered, fired, and rested for some months, but gets no better. He has a spavin in one hock, and I do not know whether that is the cause of the mischief; I should like you to examine him to see if anything can be done to relieve him. His friend examined him, and with the exception of the spavin could see nothing amiss. He advised his friend to let him perform cuneal tenotomy, just in the way of doing something, but this the owner was unwilling to have done and said he would wait. He did wait, and about three weeks afterwards he came and said, "Oh! about that lame horse! I was rather curious to see what was the matter, so I went over to the horse slaughterer's after I had had him killed, and we found a broken bone in the foot." That friend was a first-class practitioner, and that story pointed the moral that when a horse had a spavin it did not necessarily follow that he was lame in the hock.

Here was another rather curious case of foot lameness. He remembered once sending a horse to be shod; it went away perfectly sound and came back limping. Outside his yard there was a bit of level asphalte, and believing in those days in action, he thought he would run the horse on the asphalte as the yard was rather rough. On the asphalte the horse went perfectly sound, they brought him back into the yard and he went "nodding." The experiment was repeated with the same result. Then he sent the horse round to the forge with a message that they must have injured his foot, and instructions to take off the shoes and look for the cause of the mischief. Afterwards he went round and saw the foreman and asked him if he had found anything wrong. "Yes," he said, "my man had gone over it and found nothing, and I thought I would have a look, so I took the foot up. I had a drawing-knife in my hand, and it was because of that more than anything else that while I was wondering where to look I took a thin slice off the frog just to assist my thinking. The knife came up against something hard, it was the clinch of a horseshoe nail just buried, which I should never have discovered without taking off that thin slice of the horn." The peculiarity of that horse's lameness became at once clear. So long as he was on the level asphalte where he could get his foot flat down he went all right, but directly he got on to the stones in the yard, which resembled petrified kidneys, every now and then the frog of the foot would be touched and he went lame directly.

Then, again, there were complications in foot lameness which helped to deceive them. The man who had never seen a shiverer with a nail in his foot wondered what on earth was the matter when he first saw it. He had had cases of nails and pricks in shiverers, and he felt perfectly confident that if he had not known they were shiverers, he should never have dreamed they were cases of foot lameness.

Then, just above the foot, they got some cases which required a little diagnosing. Ringbone, fortunately, was not so common behind as in front,

but still it occurred. Now he supposed that a ringbone would take a month or six weeks, and sometimes three months, to develop, and during the early stages it neither bulged at the coronet nor did it cause any heat or tenderness. How were they going to diagnose that? Was there any peculiarity of action which would enable them to diagnose the first formation of a ringbone before they got the characteristic enlargement? By exclusion they might guess it, by the aid of cocaine they could find out that it was something below the fetlock, and if it was a young horse they had a right to say that it was probably a ringbone. But that was all.

Another disease more common in the hind foot was the pyramidal disease noticed recently by Mr. Willis. It was a disease in which the hoof became very much distorted, showing a distinct convexity in front, but the condition which was shown by the deformity of the foot existed for a considerable time, and would sometimes render a horse so lame that he became incapable of work before the deformity actually took place. It was not all plain sailing then, however, for the fact had to be borne in mind that there were other diseases which induced an alteration in the shape of the hoof before much lameness became apparent. In an old case of this kind they would find fracture of the pyramidal process of the os pedis in nearly every instance in which they unnerved. As a rule there was ostitis of the bone long before there was any fracture, while simple lameness might be a symptom of ostitis. They might have ostitis with much periostitis, as in the cab horse disease, or they might have ostitis and no periostitis. Probably the same thing took place in navicular disease, and in these early stages of such diseases diagnosis was almost impossible. The only way in which they could arrive at something near the truth was by the process of exclusion,—they found that such and such foot lamenesses were certainly not there, so got to the conclusion that it must be one of these.

To go up the leg a little further, how did they diagnose a fractured pastern? When a pastern bone was knocked into twenty pieces, it did not want much diagnosing, but most of them had come across a case of split pastern and been very much puzzled by it. The last one he saw in consultation with a friend was diagnosed as fractured pelvis, and they had hot-water blankets on it, not a particle of crepitus could be got in that pastern bone by the most careful handling. On the third day, however, they had crepitus, and knew what it was. Now about the hock. When they saw a large spavin well developed they knew as a rule where the lameness was. He should here remark, by the way, that every man who came across a spavin ran the horse up to have a look at the lameness. Why did he want to see the horse's action? The majority would say, "Why? Because I can tell a case of hock lameness by running a horse up once." That was pure imagination. It came right as a rule, however, for the simple reason that there were 90 per cent. more hock lamenesses, he supposed, than there were of any other part of the hind leg, save the foot, and that therefore, as a matter of practice and tact they, had a right to jump to the conclusion that any particular case before them belonged to that category. They would be nearly always right—(laughter)—not because they knew much or anything about it perhaps, but because there were so many more cases of that sort than of any other. Again, let them take hock lameness without a spavin, when there was nothing to be seen or felt to explain the hock lameness. How are they to diagnose these cases? By guess, and as the probabilities were that they would be right ninety times out of one hundred,

they could afford to be a bit wrong about the other ten. But could they tell a hock lameness from a stifle lameness by action alone? He had heard it said that this could be done, that there was quite a different movement of the animal in each of the two cases. But how could they get this different action when the hock and the stifle were so thoroughly braced together, behind and in front, by muscles and ligaments, that the stifle could not be bent without bending the hock, and they could not bend the hock without bending the stifle. These bones must always work in unison, and the femur must always preserve the same relative position to the tibia. How were they going to make out that there was any difference in action? It couldn't be. It was absolutely impossible that a horse could move his hock without moving his stifle, or his stifle without moving his hock, because they were mechanically tied together. If they drove a tin tack into the hock or stifle of a horse, action would be the same in either case—he must move both, no matter how much pain he might feel in one only.

He mentioned the stifle just now; they knew those cases of disease of the stifle in which the synovial membrane was distended, and the swelling was on the inside. So far as he knew, these were an absolutely incurable cause of lameness, which gradually but surely got worse and worse. They had been told by a leading man in the profession, only a little while ago, that of this disease there was one diagnostic symptom—that in such cases the horse always stood with the joint flexed, the foot off the ground—that he would gradually lower the foot until it touched the ground, then up it went again. If that were unseen in any other disease, it would be very diagnostic. But the fact was that in the case of a really painful spavin lameness they could have exactly the same nursing of the leg; the horse would stand with the leg up. Nor were they helped by any peculiarities of action when the horse was trotted out. In both cases he would go out on three legs, and, if kept out a little time, would go apparently sound. This was only a peculiarity of joint lameness, not of hock lameness.

Further there was the hip joint. He made a note about hip lameness, but when he came to think about the matter, he made the discovery that he had never seen one—*ergo*, he knew nothing about the subject. He would only say that he doubted very much whether it was possible to diagnose a hip-joint lameness unless there was pain on pressure or some swelling or deformity at the part.

Coming next to the pelvis, it might be said that pelvic fractures were as a rule followed by a tolerably well-defined lameness. A horse might be slightly lame from this cause—so slightly that the owner did not send for the veterinary surgeon, and the horse might appear to be all right in four or five days. The last case of this kind that he saw—a polo pony—went sound after a slight lameness and laying up for a week, but the first time he was again used, after making a sharp turn he went dead lame. He was slaughtered on a diagnosis of fractured pelvis. It was found that he had a fracture at the shaft of the ilium and also a fracture of the pubis. The latter showed polished surfaces, and, although these came quicker than some might imagine, he took it that polished surfaces showed an injury of some days' standing—three or four, or at any rate two or three days. The other fracture was perfectly fresh. He concluded that the pubis was broken on the first Saturday, when something wrong was first noticed, but there had been no displacement because no other part gave way. In numerous cases they got double fracture of the pelvis—sometimes

more than two; but in this instance the fracture of the pubis occurred first. The fracture of the ilium occurred next, because it had lost the support of a sound pubic bone, and the weight was thrown entirely on the shaft of the ilium.

He did not know whether they had ever noticed it, but there was just one fracture of the pelvis which, to his mind, gave diagnostic symptoms that could be seen and felt externally. In cases of excessive lameness where he found effusion in the perineal region, he came to the conclusion that there was fracture of the floor of the pelvis, and by actual observation he had nearly always found that his diagnosis was correct. There were three or four other hind-leg lamenesses that were diagnostic almost at sight, and that they knew as much about as he did.

In conclusion, he pointed out the distinctive signs of obturator lameness, and of lameness resulting from crural paralysis, embolism, and paralysis of flexor brachii. He apologised for covering so much ground, and doing it superficially; but he had rather wanted to confess his own ignorance and to ask them to disclose their knowledge, by which means they might all make a little progress. (Applause.)

DISCUSSION.

The CHAIRMAN said he thought Mr. Hunting must have hit many of them on more than one sore point. He hoped, therefore, that they would all take part in the discussion, and direct him as to proper methods of procedure. (Laughter.) Mr. Hunting had given them a very able address, which might be very profitably considered, and had certainly found out some of his mistakes, though he had never had the advantage of seeing him (the Chairman) make his observations and form his diagnosis. What he had said with regard to the difficulty of finding the right limb in lameness was perfectly true. Not long ago four cases of this were brought to his notice, one of which nearly led to litigation. In that instance the animal was examined by an unqualified veterinary surgeon, who diagnosed it lame behind, but when it was afterwards placed in a horse-box and returned to the owner, the latter found it lame in front. He had experienced the same difficulty with reference to shoulder lameness. Three days ago he was called in to see a black horse which had been at the Yeomanry training. It was going on three legs, it had been examined by various people, by several farmers and others, and they all pronounced it lame in the stifle joint. When he got to the place he found that the owner had been employing embrocation freely, although he should add they did not tell him this until after his examination was made. The animal was running on three legs when he saw it, and as soon as it was caught and stood quiet he went to the near fore leg. The owner said, "You are surely a long way off." He replied, "I hope I have got the right one, I am satisfied I have got one lame leg; if there are two we will look at the other later on." The horse was trotted out once more, and the owner then told him he had been treating the stifle. He (the speaker) said the shoulder was in fault, not the stifle, because he found an indentation in the point of the shoulder as though he had run something into it. That proved to be the fact. Only the other day a horse came into his yard, and he asked one of his young men which leg the horse was lame on. "The off-hind" was the reply. In reality the horse was distinctly lame from a ringbone on the near fore. This was only another instance which shows

how careful they ought to be to get hold of the right limb to start with. As to the removing the shoe, there were cases, as Mr. Hunting had shown them, in which it was absolutely unnecessary to examine the foot at all, but he believed it was the late Professor Dick who said it was always a safe thing to take off the shoe even though the horse had a broken collar bone. The horse might have a nail in its foot that had caused it to stumble. He had always found it a safe thing in practice to make sure at starting that the foot was all right. He would give them a case or two in point. A few years ago he was called in to see a horse which was suffering intense pain, and absolutely unable to progress in the least without suffering great agony. He observed that this horse was a shiverer, and he knew, as Mr. Hunting had pointed out, that a shiverer sometimes presented different symptoms to other horses. This particular animal was used for pulling waggons, and they said he had evidently been jammed between the waggons. He had made a very careful examination, but no fracture could be diagnosed. He put the matter off—(laughter)—gave the horse a dose of physic, which was usual in the country in order to reduce the pain and irritation of the system, but when he went two days later he found that the pain was even more intense, and that the horse was in extreme agony. Then he had the shoe removed, which he ought to have done before—he hoped they would remember that he was speaking of what happened seven or eight years ago—and he then found that suppuration was taking place at one of the nail holes. As soon as he was properly treated for this the horse made a good recovery. Just three weeks ago he was called in to another case in which the horse had been carting some very heavy loads, and the man said he had "wrenched his loin." He could scarcely get up after he had been lying down, and when he was up he could hardly stand. He at once ordered the shoe to be taken off, although the man said the mischief could not be there, and on making a careful examination and cutting in towards the laminæ of the toe he discovered a great cavity which extended pretty well half way up to the coronet. This was the cause of the mischief. He might remark that this animal was covered with perspiration, and gave somewhat unusual signs of being in great pain, which proved that when a shiverer had anything amiss with the foot he would show the symptoms in a most extreme form. With regard to pyramidal disease and stifle lameness, there was nothing to help them in their diagnosis, but in distinguishing between hock and stifle lameness he thought they were helped considerably by trotting the horse out. If it was hock lameness, that lameness would entirely disappear after he had gone for a few minutes, but would come back again when he had been allowed to stand for a time. If stifle lameness, on the other hand, he never found that the lameness would disappear with exercise. He had got under his care a horse now which he wished Mr. Hunting could see, because it presented the most curious symptoms in progression. Sometimes he would walk all right, but another time he would throw his leg up almost a yard away and go dead lame. On examination he could see no ulcerated stifle—in fact there was nothing to see in hock, stifle, or hip which would account for this movement. There was no heat either, and nothing else to be observed. He had had considerable difficulty in diagnosing pyramidal process lamenesses at the earlier stages. He remembered a very valuable entire horse being put before him which he diagnosed as having this complaint. In that case there was a slight ringbone forma-

tion, and an alteration of the surface of the hoof and the anterior portion as well, but the action of that horse indicated that the seat of the pain was at the top of the coronet. A horse suffering in that way always puts his foot down on the heel, and not in the usual flat form. There were one or two lamenesses that Mr. Hunting had overlooked which could easily be diagnosed in the act of progression—such, for instance, as a bruised toe or a suppurating sore of the toe. After instancing other forms of lameness so common in the country, the Chairman said that, after all, stifle lameness was one of the most difficult problems with which they had to deal.

Mr. GOOCH said he could add very little to the discussion. He supposed they had all made mistakes of the kind referred to—that they had diagnosed cases of lameness in the fetlock and other places, and found suppuration of the coronet after a day or two. That had been his experience, at any rate, on more than one occasion, and he only hoped he should live to make some more mistakes. (Laughter.) There were many cases it was almost impossible to diagnose. On the previous day he was sent for to see a cob which was lame behind, and had been so for a week. The horse was very tender round the fetlock joint, where some liniment had been well rubbed in, but he could not find anything amiss with him anywhere, so he gave the animal a dose of physic, which they usually did in the country, as Mr. Pollock had said, and left a bottle of lotion to be rubbed somewhere in the leg, and hoped that in a few days the pain would be better. (Laughter.) Like their Chairman, he had frequently noticed that hock lameness would disappear on exercise, and come back afterwards in a severer form; and he had also found that stifle lameness—which was very troublesome in their district—was exceedingly troublesome to deal with. One particular complaint, for which he should be glad to know a remedy, was a swelling in front of the stifle.

Professor ALMOND said he had listened with considerable pleasure to Mr. Hunting's paper, and also to the remarks which had followed it. He noted that Mr. Hunting was good enough to point out a good many difficulties, but that in many cases, unfortunately, he left them in the same position as when they commenced. He might venture to say perhaps that the greater number of those present could point out difficulties; those who could find out a solution, however, as the last speaker had said, would benefit them a great deal more. Mr. Hunting appeared to attach very little importance to action, and he (the speaker) took it that none of them would attach overdue importance to action. He did not think they were called upon to diagnose any case of lameness by action alone, for they had faculties of sight and touch which all helped them to form an opinion. But while he hoped that none of them would overrate the value of action, he hoped that none of them would underrate it, because he was perfectly certain that it did very often help them to form a correct conclusion. In cases where the symptoms were very apparent positive diagnosis was, of course, easy, but in others they wanted all the help they could. There was one symptom which ought not, he thought, to be overlooked, and which had at different times assisted him in diagnosis. He referred especially to the action in walking. When a lame horse was walked out he frequently relieved himself by walking on one side of the foot—that was to say, he endeavoured to throw as much weight as possible on the contrary side of the seat of the lameness. With regard to ringbone, he believed that was frequently caused by the way in which horses were shod.

When they examined the feet of colts they very rarely found that the crust was quite level. That applied to the fore feet more than the hind feet, but he had observed it in both, and he believed that ringbones were frequently set up because the smiths levelled the bottom of the feet, and thereby threw a greater weight on the side which the horse had not naturally done, and so altered the tread. In cases of ringbone they would often see that a horse put down one side of his foot before the other, and he believed that ringbone was often due to a common practice with ignorant smiths of thickening the shoe on the side which was most worn. In reality the opposite treatment should be adopted, and the shoe should be lowered on that side on which the animal naturally put its most weight. He was sorry, as the train was leaving, he could not wait to say or hear anything more about such an interesting subject.

Mr. AUGER (Saxmundham) said he had been extremely interested in Mr. Hunting's address, which had given them many useful hints, and was upon one of those practical subjects which they particularly wanted to have discussed at those meetings. With regard to foot lameness he had often noticed that excessive perspiration and great pain were caused by a comparatively simple complaint. If they did something in such instances to clear away a little poisonous gas or a little black fœtid matter, a horse, which seemed nearly to be killed with pain, would very often become comfortable and go on all right. While they did not often get sidebones in the hind limbs, he had seen one or two cases of very severe ringbone there, and in such instances he had tried Smith's treatment of opening the hoof and firing round the coronet. But these were generally very difficult cases when they occurred in the hind feet; the speaker was understood to say that for ringbone in the fore limb he had tried neurotomy with great success. So far as stifle lameness was concerned, he admitted that it was very difficult to treat, but said he had sufficient confidence to believe that he could tell stifle lameness from hock lameness by the action of the limb.

Mr. THURSTON said he thought that Mr. Hunting's paper was especially useful to younger members like himself, and perhaps still more encouraging. He had often been in similar dilemmas with respect to diagnosis to those referred to, and he attributed the fault to his own personal ignorance. Now he could take hope for the future. One point that had specially struck him was Mr. Hunting's reference to shiverers. He was once called in to attend to a horse that was a bad shiverer. The owner wanted to know whether he should destroy the animal or not. He (the speaker) said that the horse was lame in the foot, and the man in charge of the animal, who understood horses, laughed at him, thinking that symptoms of such great pain were inconsistent with such an apparently trivial cause. The shoe was taken off, and he found pus in the foot, and the horse made a fairly good recovery in the usual time.

Mr. TURNER said that Mr. Hunting had given them some useful hints which might hereafter be studied with advantage. He instanced several cases of lameness with which he found it extremely difficult to deal.

The CHAIRMAN having mentioned some other peculiar cases of lameness which had come under his observation,

Mr. HUNTING summed up the discussion in a few genial words. He said that he had on purpose slightly exaggerated the difficulty of diagnosis in the hope that he might draw out some useful hints from the discussion,

which he had happily succeeded in doing. He would readily confess, too, that he had another purpose in mind. He remembered reading some years ago in the newspapers the report of a railway accident in which some big swell was injured. Sir James Paget, the famous surgeon, was called in, and the account given was that he was not quite sure if one of the bones in the limb of the patient was fractured or not. It struck him that if a veterinary surgeon were to confess to such a difficulty as that in diagnosis there were some people who would not think much of him. While it would not do for the young practitioner in their profession, therefore, to say that he did not know right off what was the matter in any case submitted to him, he would be fully justified in taking time to consider. Another idea he had in his mind was that young men did not occasionally recognise that they did not know everything, and that if they went on in that way the time would come when they thought that they knew everything. That was the most dangerous condition of all, for the really sensible man knew that he must go on to learn, and that there was plenty to learn. (Hear, hear.)

VETERINARY EDUCATION.

Address by Principal Williams.

The Proposed Veterinary Degree.

A MEETING of the North of Scotland Veterinary Medical Society was held on Saturday, 15th Aug., in the Agricultural Department, Marischal College. Mr. J. M'Lauchlan Young, Lecturer on Veterinary Hygiene, Aberdeen University, President of the Society, presided, and was accompanied on the platform by Principal Williams, of the New Veterinary College, Edinburgh, and President of the Royal College of Veterinary Surgeons of Great Britain, Principal Lang, and Mr. Clement Baxter, M.R.C.V.S., Elgin, secretary.

The CHAIRMAN said their society was indeed honoured that day in having the presence of the Principal of that University, and Principal Williams from Edinburgh. They were still further honoured by the fact that they were to have an address from Principal Williams, who, as they all knew, occupied the honourable position of President of the Royal College of Veterinary Surgeons in Britain. So much energy and ability did he throw into his period of office for the first year that quite recently the Council of the Royal College re-elected him to the honourable position of president, an honour, which, although not quite unique, was very rare indeed, and one which he was perfectly certain the Principal appreciated very highly. Principal Williams had come there that day to address them upon a very important question indeed, namely, the raising of the status of veterinary surgeons, and to bring the profession into line with the other learned professions—(Hear, hear)—the idea being that universities might recognise the veterinary profession in the same way as they recognised the other professions. He would call upon Principal Williams to address the meeting on Veterinary Education: What it was, is, and ought to be. (Applause.)

Principal WILLIAMS, who was received with hearty applause, remarked

at the outset that his sole ambition in life was the promotion of the good of the veterinary profession. His father was a veterinary surgeon, his grandfather was a farrier, and his four great-grandfathers all earned their livelihoods by attending to the lower animals.—(Laughter and applause.) Some of them were very proud men. One of his fore-parents would not go out to cases on Sunday, another of them would not see anything but horses, but as they came down they came to understand that veterinary surgery was comparative surgery, and that they had to attend any of the lower animals when called upon. Among his ambitions in connection with the profession had been to put themselves on proper social equality with men they considered themselves equal to. Another ambition he had was to place themselves on a scientific equality with men with whom they were quite competent to work. As regards the social ambition, he had the honour to be appointed to sit on a Committee appointed by the War Office in connection with the status of the veterinary surgeons in the Army Veterinary Department. It was not a month ago since he had an interview with Mr. Brodrick on this subject. He pointed out to Mr. Brodrick that so long as the War Office stamped them as an inferior body of men in the army, it was highly improbable that the army would be properly equipped with fully-qualified veterinary surgeons. Mr. Brodrick said he saw his (Principal Williams') point. He was supposed to be on an equality now, but he was not quite on an equality, and he (Principal Williams) hoped before long, within a month or two, the veterinary surgeon would be on an exact equality.—(Applause.) That would be one step towards the attainment of his desires. The next step that he desired to see was to bring the veterinary profession in line with the medical profession. Proceeding with the particular subject of his address, Principal Williams said—They might take it for granted that to a very considerable extent the veterinary surgeon of the present day was well qualified to deal with the ordinary diseases of the lower animals, when these diseases presented themselves, but they were of opinion that they had to fill a much larger sphere in life than the simple treatment of disease. Their aim was to prevent disease affecting the lower animals, for they all knew that the health of stock meant wealth to the stockowner. But they would go a step further and not only express their desire to keep the stock of the country in good health, but to assist the medical men in preventing the spread of disease common to man and the lower animals from the lower animals to man, and they trusted that the medical men would also assist in preventing the spread of disease in men to the lower animals. This ambition was beyond the scope of the ordinary veterinary surgeon, and a man to fill a post of such a description must not only be a well qualified veterinary surgeon, but he must also be a comparative pathologist, and he should also be a man with considerable administrative ability and with administrative power. At the present day there was a medical officer of health to almost every district throughout the country, and, whenever there was an outbreak of contagious disease in man, that medical officer had full power to take immediate steps for the suppression of the disease and the prevention of the spread of the disease. Those of his audience who were not members of the veterinary profession would hardly believe what he was going to tell them—that there was no such thing as a Veterinary Officer of Health outside of London, that there was only one man in the whole of Great Britain who was supposed to be able to recognise the more important of the contagious diseases of the lower

animals, and it was hardly credible to think that should a certain disease break out at John o' Groat's House no one but that specialist in London was entitled by law to authoritatively state whether it was, or was not, a certain disease. The members of the medical profession would readily recognise that when a disease that spread with great rapidity, that had a period of incubation of three days, was permitted unchecked to continue its ravages until the London authority had stated whether or not it existed at John o' Groat's House, there was little chance of that disease ever being exterminated from the country. He would urge the decentralisation of administrative power as regards the contagious diseases of the lower animals. But before decentralisation of the power of diagnosis and administration should take place, it was absolutely necessary that men should be ready to fill such places. The education of the ordinary veterinary surgeon, as he had said, was ample to qualify him as a veterinary surgeon, but he required to study comparative pathology, sanitary science, and police, and have a broad knowledge of agriculture, to make a special study of the administration of the various Acts of Parliament, and he also required to have a broadened mind. Principal Williams did not think a man could attain these acquirements unless he mixed with others than teachers and students of veterinary medicine and surgery alone; and he should further urge that, for the sake of the country, Universities should insist in the education of men to fill what he considered a natural want. He did not ask any University to simply create a degree in veterinary science without thoroughly considering the special subjects that such a man as he had outlined would require to know. Such a degree granted by Universities in Scotland, after consulting with the heads of the veterinary profession as to the subjects required, would be much sought after by members of the profession desirous of filling many of the administrative posts in our colonies. Our colonies at the present time wanted veterinary surgeons of administrative ability. The principal administrative officer for the whole of South Africa as regards the regulations in connection with the lower animals—a most important post indeed—was a man who came from this part of the country—Mr. Duncan Hutcheon—one of the most worthy of men. Because he was a Scotchman he had administrative ability, because Scotchmen were able, at least, to administer their own affairs, and they were well adapted to administer the affairs of others.—(Applause.) A Scotchman—Mr. Gilruth—also occupied a similar position in New Zealand. But if a University simply issued a statement that there would be a degree for veterinary surgeons who attend on such and such subjects and pass examinations on such and such subjects, and these were not the subjects of paramount importance in the eyes of the veterinary profession, such degrees would not be sought after, because they would not be of special advantage to their holders. Sir Christopher Nixon, the President of the Royal Veterinary College, Dublin, had expressed his desire that the University degree should be granted to veterinary surgeons, and he stated that this degree should not confer any right to practise; it should be granted to those who hold the diploma of the Royal College of Veterinary Surgeons. Principal Williams perfectly agreed with Sir Christopher and his desire. He (the Principal) was most emphatic in desiring that any University degree that was to be granted to veterinary surgeons must be open to all members of the Royal College of Veterinary Surgeons, no matter from which college they graduated or had graduated. He (the

speaker) was an ambitious man, and he had no doubt their president, Mr. Young, was equally ambitious, and they each would like to have it in their power to try and obtain a University degree, but neither of them could possibly go back to college as students, and pass through a certain specified curriculum, though both of them, and many others in the profession, would be only too delighted to take post-graduate lectures as recognised by universities in convenient centres, and then present themselves for the degree examinations. If Aberdeen University should see its way to obtain an ordinance, create a faculty, and grant a degree to holders of the diploma of the Royal College of Veterinary Surgeons, he had no doubt that numbers of veterinary surgeons in the North of Scotland would attend the post-graduate classes and endeavour to obtain the degree. If Aberdeen University would go a step further and recognise the teaching of the subjects in its post-graduate course as taught, say, in Birmingham, Manchester, Liverpool, Leeds, Cambridge, London, and other university centres, he had no doubt that the veterinary surgeons in the immediate vicinity of those universities would attend the classes at those universities, and, when ready, present themselves for the Aberdeen University degree in veterinary science.—(Applause.)

Principal LANG, who was received with applause, having been called on by the chairman, said he was sure Principal Williams had made out a very strong case indeed for the consideration of the universities, and he could only say for the university he represented that they were quite open—they had a candid mind for all that implied the extension of university instruction, of university imprimatus.—(Applause.) He was quite certain that on any representation being made to them they should most candidly and most sympathetically discuss and consider, either with the other universities or by themselves, the suggestions that might be made. People were realising more and more every day the close connection that existed between the health of human beings and the health of the lower animals, and then the development of the scientific spirit must help materially, because that scientific spirit did not recognise the divisions and limitations that the unscientific spirit did. He was sure anything that would tend to put a hall mark upon their work was in the interest of society, and he could only say for himself, and he was sure also for his colleagues, that whatever they could do to forward their interests and to realise for them the place Principal Williams had indicated, they (the University authorities) should under wise conditions be ready to consider and promote.—(Applause.)

Professor HAMILTON, who was next called upon by the chairman, said he felt there was in Principal Williams' address a great deal of matter worthy of discussion and serious consideration. The veterinary profession was not what it used to be. It had now become a profession which must be grounded on a scientific basis. There was an enormous deal to be done. So long as agriculturists were losing hundreds and thousands of pounds yearly from what were probably preventible diseases, he thought it was a slur on the scientific education of this country that they would not take further measures to educate their veterinary surgeons to understand these diseases, and more especially to understand them from the pathological point of view. He did not think there could be a more appropriate time than the present for the consideration of the relationship of the veterinary profession to our universities. Speaking from his own professional point of view—from the pathological point of view—he became

more and more convinced that their teaching in medicine was much too narrow, and that in fact the key to the progress of the consideration of the diseases of man was to be found in the future not so much from the study that actually proceeded through man himself, but was to be found in the comparative study of medicine. He had that forced upon him of late in connection with some work he had been doing for the Board of Agriculture, and although he could not at that meeting give even a sketch of what that work was, he must say what he had learned from the study of some diseases of the sheep and other animals had opened up to him a new key to the study of medicine altogether—something he had no conception of, something that so far as he could see at present might explain a host of diseases of which they up to now had not the slightest conception as regards causation. As long as that was the case, he thought it was of the very greatest importance even from the medical point of view that they should be associated in some way with the veterinary profession. —(Applause.) What was wanted was that they should be in a position to give their young men a thorough grounding in the science of the profession which would enable them to go forward instead of groping in the dark. In that respect, as in many other respects, it was extremely desirable that some arrangement should be come to by which their agricultural departments and veterinary colleges should be adapted with a degree. In Edinburgh there was apparently a movement on foot in that direction, and there was no reason why other universities should not take up the matter in the same spirit. It would be an extremely desirable thing for the country. It would lead to the saving of an immense deal of money, and it would also lead to the encouragement of commercial enterprise from the agricultural point of view and add a new spirit to it.—(Applause.)

On the motion of the Chairman, a hearty vote of thanks was accorded Principal Lang for his very kind and sympathetic remarks regarding the profession, the Principal having to leave the meeting before the business was concluded.

In the course of further discussion,

Mr. JAMES THOMSON, M.R.C.V.S., Aberdeen, said he was very pleased to think that there had been held up to the younger generation prospects of a higher education, a more scientific training, which would lead to the veterinary profession being regarded by the public with much greater confidence and greater respect than hitherto.

Mr. CRABB, Aberdour, and Mr. M'LAREN, Brechin, also spoke.

On the motion of the Chairman, very hearty votes of thanks were accorded to Principal Williams for his great kindness in coming so far to address the Society and for his most interesting and instructive address, and also to Professor Hamilton for not only coming there that day but attending their previous meetings. The Chairman said he could assure them there was no one who had a more kindly spirit towards their profession than Professor Hamilton. He said so advisedly, because of the very close association between Professor Hamilton and himself for some time.—(Applause.)

Principal WILLIAMS, in acknowledging the vote of thanks, advised the Society to exercise whatever influence they possessed with members of the Aberdeen University Council with the view of having their desires given effect to.

On the motion of Mr. Crabb, Aberdour, seconded by Mr. Howie,

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On the motion of Mr. Crabb, Aberdour, seconded by Mr. Howie,

Alford, Mr. M'Lauchlan Young was unanimously re-elected president of the Society for the ensuing year.

The other office-bearers were also re-elected, and the secretary was accorded a hearty vote of thanks for his labours during the past year.

A vote of thanks to the President closed the proceedings, and the members of the Society afterwards dined together in the Bon-Accord Hotel.

THE ARMY VETERINARY DEPARTMENT AND THE GENEVA CONVENTION.

BY GEORGE H. GUILLUM SCOTT, BARRISTER-AT-LAW.

DURING the last three years so much has been written about the Army and its horses, that any one who ventures to add to the mass of literature on this subject must surely do so with much hesitation. But now that the question of whether or no the privileges of the Geneva Convention shall be extended to include veterinary surgeons, as well as doctors, is likely to be brought prominently forward again, it may be of some interest to readers of the *Veterinary Journal* to be reminded of the steps which have already been taken to bring about this end. In 1870, during the Franco-German War, certain measures were taken—more particularly by Germany—to secure the immediate destruction of all badly wounded animals, and to make provision for attending to those less seriously injured; but nothing definite was done at the time to extend the provisions of the Convention of 1864. Again, at the Peace Conference, held at the Hague a few years ago, the question was revived, and an opinion was expressed that a conference of the signatories to the Convention should be held at an early date, to go into the matter carefully, with a view to extending its protection to veterinary surgeons and others, whose business it was to look after wounded and disabled animals in time of war.

The war in 1899 once more brought the matter prominently forward, and at the outset the Royal Society for the Prevention of Cruelty to Animals approached the Secretary of State for War with a view to the formation of a special corps to destroy all badly wounded animals left on the field after a battle. To this suggestion the Secretary of State pointed out that it would be impossible to allow such a corps of non-combatants to accompany an army in the field, seeing that they could claim no protection from the enemy's fire under the Geneva Convention, and, further, that nothing more could be done "unless and until some International Convention should extend to those caring for wounded animals the same protection which the Geneva Convention provides in the case of men."

In addition to this suggestion, the Society entered into negotiations with the Swiss Republic, and at a Conference held at Berne in August 1901, a Memorial was laid before the late President of the Swiss Republic urging him to call together the representatives of the Great Powers at the earliest possible opportunity, in order to effect this extension before the outbreak of another war. Both the late President and his successor, Herr Deucher, agreed to place the papers on the Dossier of the Swiss Government referring to the Convention, whilst promises of support have also been received both from the English Colonies and from America. So that it is probable that when the Convention does meet, some extension

will be made in favour of those who are placed in charge of sick and wounded animals.

That the veterinary surgeon on the field of battle should be able to claim some such protection as is afforded by the Geneva Convention of 1864 to the doctor, seems perfectly reasonable, especially having regard to the fact that, under the conditions of modern warfare, so many more animals—principally horses—are likely to be employed than has formerly been the case; but whether it is necessary or desirable to give them the same licence as is granted to the doctor is a matter which requires to be carefully and fully considered, for to have a large number of non-combatants moving about the actual firing line is a great hindrance to both sides, and as horses are never, if possible, brought up into the firing line, it is probable that the most satisfactory plan would be to establish well-organised and fully equipped veterinary field hospitals, which should follow up, as closely as possible, a column in the field, with the object of destroying all badly wounded animals, and also of taking charge of and sending back to *base* camps those horses and mules which, from one cause or another, have become unfit for work, but which, with rest and treatment, could be sent back to the front in a short time.

By extending the privileges of the Geneva Convention to the individuals engaged in such work as this, it will be possible, not only to afford relief to injured and disabled animals, but also to effect a considerable reduction in the enormous wastage which has hitherto been inevitable in every campaign among the animals employed by an army in the field.

VACCINE AS A PREVENTIVE MEASURE AGAINST BLACKLEG.

BY T. M. INGLIS, M.R.C.V.S., FORFAR.

UNTIL some time ago I had great trouble in assisting my clients to get rid of this troublesome disease called blackleg or quarter-ill.

In this district we have a very large amount of outbreaks in a season, and, as is well known, a veterinary surgeon can do little or nothing with the diseased animals.

All kinds of preventive measures are adopted by the farmers, some have all their young stock setoned at the dewlap, and some bleed freely twice a year. Then we come across the different mixtures handed down from generation to generation, some of which I have no doubt have their origin from the time of the Flood.

Setoning, physicking, and bleeding may at times prevent an attack, but are not reliable. Take, for instance, a few yearlings that have been taken off poor pasture or food of any kind to rich and good keep. They rapidly change condition and do well. If the owner is observant enough to watch this rapid change of condition, and even bleed the likeliest subjects, or even seton and physic, he may ward off an attack. The likely subjects are easily picked out by an owner who loses animals frequently from this malady.

I have had to try every conceivable measure, but found that the disease would still crop up.

Some farmers had given up keeping and rearing young stock, as they seemed always to have the misfortune to get them a certain length, then quarter-ill would spoil their chances for a ready market.

I have studied very closely the different vaccine preparations, and resolved to try the "blacklegine" form prepared by the Pasteur Vaccine Co.

In the early part of last autumn I obtained a quantity from Messrs. Huish & Co., the British agents of the Company, and inoculated fifteen yearling cross-bred stirks on a farm particularly noted for blackleg. I, with the owner, who is a well-educated gentleman and a keen observer, examined all every day to see the result of the vaccination. We kept half the number outside, and the other inside, to see if this would have any different results. We found the animals to exhibit no inconvenience whatever, their appetite remained unaltered, no stiffness or swelling over the seat of inoculation, and the temperature did not go beyond 102° F.

Being satisfied that the virus was not to produce any unfavourable symptoms, I got the owner to consent to the inoculation of his whole stock, which was done immediately on a herd of about sixty animals.

Some days elapsed from the vaccinating of the first lot and the second, and during that time one animal had died from the disease.

I now set to work and procured more vaccine, and have now scores of cattle protected on farms where the disease always made its appearance.

I have never had a single case of quarter-ill in an inoculated animal since last autumn, and the owners who had given up keeping and rearing stock are making a fresh start, always getting their new purchases protected by inoculation.

I have, however, had several outbreaks of the disease amongst herds that were not protected, and have had the remainder inoculated at once, and the disease apparently disappearing.

I usually select the right shoulder of the animal to insert the virus, which is in a "cord" form held together at the one end by a little brass button. I usually clip the hair in the form of a cross before inserting the needle, as it is very useful should the animal get away before the operation is complete, which sometimes happens, and then it is difficult to pick it out unless it has the mark. I have the animals held by the nose, and if aged run their heads into a rope and pull them to a strong post or fence. I make a small incision in the middle of the cross with a very small trocar, and then insert the needle with the vaccine, clipping off the button, and releasing the animal.

As my results have been favourable, and my clients satisfied, I have every confidence in this form of inoculation.

I have no experience of any other form than the "single blacklegine," and have great confidence in its value as a preventive agent against this troublesome and incurable disease.

I inoculate a second time after six months to make sure that the cattle are protected thoroughly.

Messrs. Huish & Co. have given me every assistance and information about this vaccine, and have always responded promptly to orders sent in a hurry.

I may mention that amongst the different breeds of cattle operated upon was a herd of one of the best breeds of Aberdeen-Angus cattle in the country. The owner of this herd nearly every season lost one or more of his valuable yearling bulls in preparation for show purposes, and now speaks highly of this protective measure.

I would recommend practitioners who are in a district where quarter-ill exists to try the vaccine, and I am sure they will not regret it.

PRESIDENTIAL ADDRESS.[1]

BY MR. H. C. REEKS, SPALDING.

GENTLEMEN,—In these my remarks on taking the chair I intend to be brief. It seems to me that an address of this nature, if of any length, tends too often to be a repetition of what has been said before.

At the risk of treading on dangerous ground I wish first to say a few words concerning the attendances at our meetings. The history of the Association, the way in which it was founded by a small body of earnest men, each anxious for the welfare of the profession to which he belonged, and its career under their management, I shall not touch on. What more concerns us is its present position.

I believe I am correct when I say that financially we are—well—solvent. We may not have a large surplus of cash in hand, but at any rate we can see our way in front of us. Considering that alone, that the Society is not in monetary difficulties, the first thing that strikes one, especially a newly elected member, is the smallness of the gathering. I must honestly confess to a wish to see a change, to see the meetings better attended, a greater interest taken in the matters brought forward for discussion, and more individual enthusiasm for the success of the Association.

It is heartbreaking for a man to prepare an original thesis only to read it before a comparatively small company, say five or six, no matter how enthusiastic or interested those five or six may be.

Our Secretary informs us he has a difficulty in obtaining papers. To my mind this apathetic attendance forms one very palpable reason for the trouble he has in that respect. We have on our books now between 30 and 40 members. Surely, gentlemen, it would be hard indeed to say that among that number of modern veterinary surgeons there is insufficient talent to keep us supplied with three papers per annum. It cannot be that. It is not as though we were a gathering of chimney-sweeps or shoeblacks. From that number of intelligent veterinarians we should be able to obtain double the necessary number of papers, and each of them good.

A better attendance at the meetings would mean more stimulus to intending essayists. Consequently it is our duty, each one of us, even at some little inconvenience to ourselves, to attend as many of the Association's meetings as possible.

If every member now on the books would but resolve to attend one meeting per annum—that is to say, one only out of three—we should even then advance our present rate of attendance. Surely that is not asking too much of those who have joined this body.

I feel confident that in ventilating this subject I am only airing the views of those around me. Failing a better attendance at the meetings as at present arranged, I would even go so far as to suggest that an annual meeting, if more largely attended, would prove more to our advantage.

Passing from this to questions of a social or political nature, we may pick out two as calling for remark.

First will come that ever green topic "the social status of the veterinary surgeon." Now and again, usually from the pen of a youth graduate, more rarely from that of a greybeard, we find an indignant letter in one or the

[1] Read at a Meeting of the Lincolnshire Veterinary Medical Association on 18th June.

other of our professional journals exclaiming bitterly against the position the writer's profession compels him to take in the social circle of his neighbourhood.

Regarding the earnest and constant attention his calling will exact, the hours it will claim, and the energy it will rob him of, I am bound to admit that to a very great extent the veterinary surgeon will be debarred from participating in the social life around him. But that the profession, simply as a profession, will form any serious bar to a man's social recognition I do not believe. I am far from saying that "cook's son," "duke's son," should indiscriminately "hob-nob," be "hail fellow well met" the one with the other, but I do most emphatically assert that a man's social position is made by himself and not by the profession to which he happens to belong. Incidentally, in making himself the man makes his profession. Self-respect will command the respect of others. In proportion as a man by his own efforts raises himself, so in greater proportion will he become elevated in the eyes of those looking on.

This sounds somewhat like preaching, I admit, but it expresses the views I hold concerning discussions as to veterinary surgeons' social status. I consider those discussions futile—nay, childish. To a larger extent than is usually thought, the man makes the profession, and not the profession the man. Surely that is a nobler view than believing we have only idly to saunter into some one or other of the professions other than our own in order to become a demi-god of the little social eddy in which we may happen to be floating. It is, at any rate, a more powerful incentive to the leading of an active and strenuous life. With certain limitations life holds out to a man what he chooses to pluck, provided the "plucking" be energetically performed. It is the old tale of mother Nature, the all powerful law of evolution—the weaker going to the wall, the fittest surviving—and we may, in the words of our American cousins, "go the tarnation whole," that the man who is constantly bewailing his lack of social recognition has very largely only himself to blame.

The man who so complains has only to look around him. I have met —you all have met—veterinary surgeons whom to have known has been an honour — men who have made themselves, made their profession, and commanded the respect and admiration of their fellow-citizens. One such has lately passed the Great Divide—Harry Olver. In the words of the Editor of *The Veterinary Record*, "All who knew him will for years to come connect the holder of the title of veterinary surgeon with the life and work of a good man and a gentleman."

No, the profession will not make us. It is for us to make ourselves, to emulate the example of such a man as I have just mentioned. In so doing we shall raise ourselves, the profession to which we belong, and pay the greatest tribute to his memory.

One other question that has been troubling the professional mind of late is the one of our representation in Parliament. Those who advocate this appear to expect that many grievances under which veterinary surgeons labour regarding State appointments and State recognition would in that way be remedied. I do not believe this.

Granted that reform in this respect is needed, I cannot for the life of me see that the election of one man to an assembly of some several hundreds is at all likely to bring it about. There are so many and more influential parties in our House of Commons, each with a private axe to

grind, that so comparatively small a body as the veterinary would be almost ignored.

To my mind, though it smacks somewhat of coercion—always a dangerous remedy, no matter what the ill, many of our grievances might be considerably lessened by a greater spirit of "trades-unionism" among veterinary surgeons themselves. Though it does not live there under that name, a form of trades-unionism exists on the General Medical Council, especially in the framing of their laws relating to professional etiquette. As a body we are open to improvement in this respect, and alterations therein must come from the governing body of our own little clan, and not from that of the nation.

One last word, gentlemen, and that is to thank you most heartily for the honour you have done me in electing me your President. I feel that it has given me certain duties and responsibilities. The former, with the help of my brother members, I shall perform to the best of my ability, and the latter I hope I shall not shirk.

"SWINE FEVER INSPECTORS."

In answer to the call of the President, Mr. J. SMITH said he was not going either to make a speech or to read them a paper, but there was a grievance from which he and other members of the profession were suffering, and he considered that their meeting was the proper opportunity for bring it forward. They might think he was very personal, he was not sure that in expressing his opinion he was not voicing the feelings of a large majority of the veterinary inspectors in the country. He had to find fault with the action of the Board of Agriculture. As they were aware, a certain number of the veterinary inspectors were receiving retaining fees and others were practically struck off the rolls at the beginning of the year. He did not find any fault with those inspectors who had been fortunate enough to be appointed. Had he been offered the same chance, as a matter of business he would have taken it, but that did not prove that the action of the Board was right. The inspectors were practically dismissed without any information or reason being given. The inspectors who have been discarded by the Board of Agriculture have to pay rates and taxes the same as the substituted men, and, speaking personally, he might say that not being employed by the Board made a considerable difference in his income, and, more than that, he maintained that the employment of a neighbouring inspector in one's district certainly did not add to the local man's prestige. He had no fault to find with the inspectors solely employed by the Board. Mr. Smith thought that if a proper representation was made to the right quarter what he complained about might be remedied. Colonel Nunn had once told them that nothing could be done with the Government without organisation, and he considered that in other Veterinary Medical Associations they had the instrument to hand and they ought to use it. He could see two reasons for the Government making the change—either the preferential tariff men were able to recognise swine fever and the other inspectors were not, or else the change has been made for the sake of economy. In considering these reasons he said he had been an inspector for sixteen years, and he had seen enough of swine fever to recognise it when he came across a case. The only time his opinion was doubted—as an Irishman would say—was twice, but it was in the same outbreak, and at the third time of asking the Board agreed with

him that they had to deal with swine fever, and the rest of the pigs were killed. He thought they might dismiss the idea of incompetence being the reason of their being no longer employed by the Board. The other reason might be on the ground of economy, but this would not apply to his district. A client of his asked him to look at a pig, and as it had been reported as swine fever a gentleman was sent over from Cambridge to inspect it. He declared it was swine fever and the district was declared an infected area. He drove over it again in a fortnight, and again in a month, when the place was declared free. Each time this inspector had to drive 19 miles, and past Mr. Smith's house to inspect the place, which was only a few hundred yards from Mr. Smith's house. Another case had occurred when an inspector had been sent from Peterborough to a place within 200 yards of his house. There could be no economy in sending an inspector all these miles when qualified men were on the spot.

The PRESIDENT did not think it was for the sake of economy or a slight on the local inspectors; it seemed to him that it was getting in the thin edge of the wedge to knock the regulations on the head.

Mr. GRESSWELL said they had no cases in Peterborough, but two officers from the Board called on the County Council and asked them to make regulations. He fought against it, and with the aid of the City Council defeated the making of the regulations by one vote.

Mr. BINDLOSS considered the action of the Board was very hard on the local inspectors. He had had a very large district, and at the end of the year it had been taken from him. He did not think economy had anything to do with it, for he had known the present inspector drive 19½ miles in a hansome cab to inspect. But the Board seem to want two opinions before they would believe anything. He did not think the work was any better done than by the local veterinary surgeon, and there were not too many pickings to be got from the Board for them to take work away from the local man, who, he thought, ought to be appointed for their own districts, and not one man to have such a large area.

Mr. GRESSWELL said he should propose that the local veterinary surgeon should be called in to inspect suspicious cases, and to report to the authorities instead of to the police.

Mr. BINDLOSS said in his district, if he inspected a case of suspected swine fever and found it was so, he reported it to the police. His decision had been overruled by the police more than once, and it had turned out that the constable had been wrong.

Prof. PRITCHARD: Next time I should report direct to the Board.

Mr. BINDLOSS: I don't, I report it to the police and then I hear nothing more about it.

Prof. PRITCHARD: I should go a step higher next time.

Mr. SMITH said he had had a pig killed that had died from anthrax and ordered it to be buried, but it was left in a field until the morning, and the disease spread to some sheep, pigs, and cows that were in the field. The policeman said it was not as he had reported when he ordered the pig to be killed.

Mr. NICKOLLS asked if they could not combine with other societies and bring the matter of the local veterinary surgeon before the Board, and see if they could not send up a joint resolution.

The SECRETARY said he had got on very well; if he had any suspicious cases he ordered them to be reported to the County Council cattle inspector.

The cattle inspector generally called him in when the case was at all suspicious but he had not any appointment whatever.

Prof. PRITCHARD thought it would be better that the different societies should join together than that a resolution should go to the Board of Agriculture from one Association alone.

Mr. SMITH moved that the following resolution be sent to the various societies asking them to pass a similar resolution for presentation to the President and Secretary of the Board of Agriculture:—"That this meeting of the Lincolnshire Veterinary Association respectfully suggest to the Board of Agriculture, that the employment of Local Veterinary Inspectors to determine the existence of Swine Fever or other Scheduled Diseases in a neighbouring inspector's district, is likely to decrease the local practitioner's prestige in his own district, and is calculated also to do him harm."

Mr. BINDLOSS seconded, and Mr. Gresswell heartily approved of the resolution, which was carried unanimously.

Translations and Extracts.

IMMUNITY TO TETANUS FROM DRY ANTI-TETANIC SERUM AS A DRESSING FOR WOUNDS.

BY M. A. CALMETTE.

GUINEA-PIGS are early rendered immune to tetanus by the absorption of small quantities of anti-tetanic serum through a small wound one-sixteenth inch long. If the wound is only dressed with liquid serum immunity is doubtful, but if a small quantity of dry serum, finely powdered, is dusted on it is certain, and a few milligrammes render animals resistant to a toxic doze multiplied by ten.

This induced M. Calmette to determine if tetanus could not be prevented by using dry anti-tetanic serum as a dressing to wounds. Sweepings and dust mixed with earth were impregnated with tetanus bacilli and dried at 35° Cent. A small penetrating wound was made in the back and thigh of a guinea-pig and powdered over with this dust; the animal became tetanic in from four to six days. The experiment was repeated in ten guinea-pigs, the inoculation being made to different parts; all died.

Ten other guinea-pigs were treated in a like manner and two to six hours afterwards dry anti-tetanic serum applied; none of these animals became tetanic.

If the serum is used more than seven hours after infection the results are uncertain, some animals becoming tetanic, others escaping, but if twelve hours are allowed to elapse all succumb. These experiments appear to be of great practical value, as the dry serum retains its activity indefinitely and is early preserved, its use as a dressing is easy, as no special instruments are required, and it can be used by inexperienced persons.

(*C. R. Ac. des Sciences*, 11th May 1903.)

ANTI-TETANIC SERUM.

BY PROFESSOR A. LEBAT, LYONS VETERINARY SCHOOL.

ALL the herbivora are susceptible to tetanus, and especially equines so fatal is it that there is a saying, once attacked, dead.

It is only necessary to refer to the various veterinary and medical publications to see how those practitioners who have used anti-tetanic serum are unanimous as to its preventive action.

My first experience of the serum at the Lyons College was confined to patients suffering from severe or contaminated wounds or injuries, or who had undergone operations of a severe nature, or that had lasted for a long time.

I then had to return a horse to the owner after operation, and knowing that he lived in a locality where there had been cases of tetanus amongst both human beings and animals, I used the serum, and I now make it a part of my regular practice to use it in all cases of operation or dangerous wounds. From November 1898 up to date I have used it in 706 cases, including 1 bull and 1 ram, the following being a synopsis.

Operations on the foot, 71; operations on bones, necrosis, trephining, &c., 25; injuries and various wounds, especially of the limbs, 74; poll evil and fistulous withers, 9; hernia, 21; castrations, 196; castrations on cryptorchids, 112; ovariotomy, 4; scirrhous cord, 23; removal of tumours, 62; plastic operation for broken knee, 3; arytenoidectomy, 2; cricoidectomy, 1; tracheotomy, 3; suppurative jugular phlebetis, 2; urethrotomy, 1; tenatomy, 11; neurotomy, 62; subcutaneous injections, 23.—Total, 706.

All the animals that have been inoculated have remained healthy, although some had been in contact and exposed to the disease, and some returned to places where it was prevalent after operation. All were affected with wounds of various sorts, either accidental or operation, that were favourable for the entrance of the organism, and there can be little doubt but that these favourable results were due to inoculation. The objection may be urged that these animals would not have become affected even if they had not been inoculated, and, no doubt, for statistical purposes ten times the number of cases would be preferable, and although there is no proof that they ran any special risk, it is reasonable to suppose that inoculation saved some.

Indeed, there were some control subjects, as by error, or only being a short time in the hospital after operation, certain animals were not inoculated, and three died of tetanus, viz.—(1) a colt castrated by the covered operation, returned to the owner the next morning; (2) a filly operated on for umbilical hernia, by ligature *en masse*, and returned to the owner after a week; in three days' time she developed tetanus; (3) a horse badly wounded on the off-fore fetlock and cannon bone. The part was carefully disinfected and sutured, but sixteen days after the accident tetanus declared itself. These three cases appear to me to be considerably in favour of the opinion I hold, and I think that without inoculation the mortality would have been much greater.

These observations and experiments have proved that although the action of anti-tetanic serum is certain it is only temporary, but that this can be prolonged by successive injections. According to Nocard two are

sufficient, one as soon as possible after the operation or injury, and a second eight to ten days afterwards.

For various reasons, such as the owner not consenting to leave the patient in the hospital, some cases could only be given one injection. In such cases a double one was used, which lasted for at least five or six weeks, giving ample time for the wound to heal and close the door to further infection, also when the effects of the injection had ceased the primary infection (if any) would have by this time been rendered innocuous.

It would therefore appear that a single injection was all that is necessary, but it is more prudent to give two, as advised by M. Nocard.

The immunisation acts not against the bacillus, but on the toxine elaborated by it, as tetanus is a poisoning or intoxication, and this toxine acts on the nerve centres, commencing at the filaments in the neighbourhood of the wound, and extending along the trunk to the centre. The serum arrests its effects before its arrival at the centre, as inoculation, even intracerebral, is useless if the toxine has invaded them.

This theory explains why it is advisable that the injection should be made directly after the infliction of the wound, and as a primary injection does not prevent the growth of the bacillus, and that its effects should take place before the secretion of the toxine it is advisable to repeat it. In theory this should be done at intervals till the wound heals, but in practice two, at from eight to ten days' interval, are sufficient.

If the nerve cells are affected by the toxine the case is hopeless, and this explains how the serum is useless as a curative agent when used on a subject already attacked with the disease, although there are numerous cases to the contrary reported in the professional publications, but no doubt these are subacute cases which are certainly amenable to treatment.

Such cases are not invariably fatal, and in those cured it may well be asked what part the serum plays, as there can be no doubt that it is of use. According to Borrel it neutralises the effect of the toxine which continues to be elaborated in the neighbourhood of the wound, and if the intoxication is not extreme the patient is able to sustain the long effort necessary before a cure can take place. The attack is cut short, and although a cure is not certain, at all events the animal has a better chance of recovery as the amount of toxine secreted is limited by each injection.

In chronic or subacute cases the serum is clearly indicated, as the primary quantity of toxine eliminated by the bacilli is not more than the animal can withstand, and that subsequently elaborated is rendered harmless.

The following conclusions may be arrived at:—1. Anti-tetanic serum as a curative agent is uncertain where tetanus is established. 2. As a preventive it is absolutely certain. 3. It should invariably be used in those places where the disease is common, and in all cases where there are wounds that are likely to give the bacilli access to the system. 4. As a precaution the serum should be used after all operations.

(*L'Echo Vétérinaire*, Liege, Belgium, June 1903.)

TO OUR READERS.

Being fully aware that a thorough knowledge of all the diseases of Mammary Glands is of vital importance to human beings, we have obtained the plates and copyright of this admirable work, and Veterinary-Lieut.-Colonel Nunn has kindly undertaken its translation into English. We published the first portion in June 1902, and shall continue to publish it in monthly parts, and afterwards in book form.

DISEASES OF THE MAMMARY GLAND.

BY P. LEBLANC, LYONS VETERINARY COLLEGE—TRANSLATED BY VET.-LIEUT.-COLONEL NUNN, A.V.D., F.R.C.V.S., ETC.

(*Continued from page* 91.)

Complications.—In milking cows it is often complicated with arthritis and synovitis. The animal stands and moves with difficulty, and is very lame. The synovial sheath is tense, hot, and painful, and the surrounding region swollen and deformed. As the primary lesions disappear, so do these secondary ones, and with them the lameness.

Lesions.—The diseased quarter atrophies, and is transformed into a fibrous mass. On section it is firm, dense, compact, and of a dirty white colour. There is an excessive amount of interstitial connective tissue, but most of the lobules are atrophied and obliterated. Microscopic examination clearly shows the lesions to be sclerosis of an epithelial origin, which is desquamated from the walls of the canals, blocking up their lumen as well as the acini, which are in many instances greatly dilated, the interstitial connective tissue being also much infiltrated. In sections stained with methyl blue, the streptococcus is seen amongst the cellular débris. —(Nocard and Leclainche.)

Diagnosis.—The contagious nature of the disease and the form it assumes, "so often catarrhal," are valuable indications. The clot formed by the milk, the absence of abscesses which so frequently are complications in parenchymatous mastitis, and the metastatic tendinous or articular synovitis should all be considered.

Prognosis.—Is always bad. As to its contagious nature, Cléments has seen 100 cows attacked within three weeks, and its termination is generally induration and loss of the quarter, from which but few recover. All other factors being equal, the attack is more severe the nearer the cow is to calving, and according to Zschokke the larger the number of streptococci found in the milk so is the greater the danger, which he maintains depends on the state of health of the patient. He advances the theory that if only short chains are present the disease is curable, but if long ones are it is not.

Treatment.—Preventive measures are of primary importance, the animals being isolated, the stalls cleaned, the flooring dug up and renewed, and the whole carefully disinfected.

The attendants on the diseased cattle should not be allowed to come in contact with the healthy, the cows must be milked into separate pails, and the greatest care taken it does not get mixed. If not altered it may be boiled and fed to pigs, but usually it is advisable after first boiling it to throw it away.

Nocard and Mollereau advocate the injection of a warm 4 per cent. solution of boracic acid into the gland about 100 to 150 grammes, two or three times at intervals of five to six days, when the milk will assume its normal state. Galtier uses a solution of iodine in the same manner.[1]

With the same object Eggeling advises an injection of corrosive sublimate to be retained ten to fifteen minutes, Weigenthaler salicylic acid, and Eber carbolic acid, with local applications, such as a solution of acetate of lead, or an ointment 1 to 4 of camphor and green soap to be applied with massage.—(Reimers.)

We do not place much faith in irrigation of the sinus, as, besides being one that requires skilled application, the sinuses are irregular and full of pockets, so that it is almost impossible to properly disinfect the whole, especially the large canals, which are always implicated. We have repeatedly tried this plan but without success.

CHRONIC PARENCHYMATOUS MASTITIS.

Chronic mastitis is much less important than the acute form and is not so often seen, which is not surprising when it is remembered that if affected cows are fattened for the butcher, ewes and goats die, and at any time it is not common in the sow or mare, and the only animal it is likely to be noticed in is the bitch. Unfortunately but little mention is made of it in veterinary literature, as most of the cases of hypertrophy of the gland in this animal are described as tumours, whereas in reality it is the sequel of previous inflammation.

CHRONIC PARENCHYMATOUS MASTITIS IN THE COW.—INDURATION OF THE GLAND.—CHRONIC ABSCESS.

Chronic mastitis in the cow is always the result of a previous acute attack, the usual lesions being "chronic abscess" and "partial or diffused chronic mastitis," which latter is sometimes termed "induration."

1. *Chronic Abscess.*—Is always due to a former attack of mastitis. The inflammatory symptoms disappear, and the cow again comes in milk, to all appearances recovering perfect health, whereas points of infection exist that only require some exciting cause to be aroused into activity. Anything will do this, such as a kick or blow, or even the physiological congestion accompanying the next calving. The case may remain latent for weeks or even

[1] V. Galtier. Treatment of streptococcic mammitis in the cow with injections of solution of iodine. Bull. de la Soc. des sc. Vét. de Lyon, 1901, No. 2.

months without attracting attention, and even when the abscess does form does not give rise to much inconvenience.

The cow continues in milk, and until there is a considerable collection of pus the gland is not deformed. When this takes place there is a certain amount of œdema, which fluctuates if the pus is near the surface.

The only treatment is to open the abscess and evacuate the pus, which generally is abundant, white, and with a milky smell. There is almost always a sequestrum in the cavity, which must be broken down and removed in fragments, care being taken not to injure any of the large blood-vessels that cross the cavity, which must be frequently douched with a warm antiseptic solution.

2. *Partial Chronic Mastitis.*—In all probability this is the result of intensified inflammatory action in certain localities during the primary attack of acute mastitis. These portions, being more profoundly altered than others, do not recover their normal condition with the rest of the gland, but always remain prone to further attacks.

Such lesions are often seen in old cows whose udders are rarely of a uniform suppleness, but have in them hard, firm patches that are painless but incompressible. On microscopic examination a large preponderance of fibrous tissue over the true gland structure is seen, with atrophy of the acini, which are sometimes obliterated by pressure, or, on the contrary, may be dilated by obstruction of the canal.

Sometimes, however, these hard masses are cysts formed from the mucous membrane, which may or may not contain milk.

3. *Diffused Chronic Mastitis or Induration.*—Induration is one of the terminations of acute mastitis, and consists of atrophy with fibrous degeneration of the diseased quarter. On manipulation the part is felt to be hard, firm, and smaller than the other quarters, with the secretion of milk almost entirely stopped, the teat being contracted and wrinkled up, the animal being otherwise in perfect health.

Microscopic examination shows an abundance of connective tissue round the acini, with the formation of cysts in them. There is no pain, and the general state of health and functions of the body are not interfered with, neither are the remaining quarters, but the animal readily fattens. Treatment is useless.

CHRONIC MASTITIS IN THE BITCH.

This is exceedingly common, in fact it is rare to find an old bitch that has had many litters whose mammæ are perfectly normal, but no doubt many of the cases described as adeno-fibromata, fibromata, and tumours are nothing but the results of a previous acute attack of mastitis. The enlargement is noticeable by contrast with the other glands, if the animal is not suckling, and should be considered as chronic lesions, not tumours.

As in the cow, the lesions may be localised or they may involve the whole gland, converting it into a hard, fibrous mass, irregularly nodulated, but which is painless.

In certain cases there are cysts of undoubted inflammatory origin in the stroma of the fibrous mass, which may develop until they invade the whole gland; these may be single or multiple. The walls are studded with sessile hemispherical granulations, and the fluid contents vary, being sometimes a clear yellow serum, at others thick and viscid.

The only treatment is extirpation, which if properly performed is successful, there being no danger of recurrence. (See article *Tumours.*)

BOTRYOMYCOSTIC MASTITIS.

A. Mare.—Botryomycostic mastitis is not uncommon in the mare, the first instance being reported in 1890 by Nielsen and Sand, who saw five cases. The gland is swollen, "looking as if the mare was in milk," hard, and irregularly nodulated; the skin being tense, shining, and adherent to the structure; it is slightly painful, and usually both quarters are involved. When she moves the animal carries her hind legs apart with a straddling gait.

There are always one or more fistulæ penetrating deeply into its substance, from which is discharged a small quantity of thick yellow pus, in which are a number of yellow granular bodies resembling those of actinomycosis, but much smaller. The parasite can be discovered on microscopical examination. Fröhner also records several cases.[1]

The only treatment that is of any use is extirpation of the gland, which has been done under an anæsthetic by Sand with success.[2]

B. Cow.—The disease has been observed by Csokor, causing fibromatous changes in the organ with fistula. Microscopic examination confirmed the diagnosis.[3]

Immelmann also reports a case.[4]

C. Sow.—Hakanson saw one case in which the symptoms were the same as the mare. The gland was extirpated, and a cure effected in two months.

ACTINOMYCOSTIC MASTITIS.

A. Cow. — Like botryomycosis, actinomycosis attacks the mammæ, gaining access by the teat, causing neoplasms of varying size in the parenchyma, or glandular sclerosis, analogous to that of tuberculosis, which suppurate, forming ulcers and fistula, in which

[1] Fröhner. Botryomycose des Euters bei einer Stute. Monats. f. Thierheil., Bd. vii. s. 55.

[2] Sand. Ueber Botryomy. im Euter bei der Stute. Arch. f. Thierheil., tome xix., 1893, page 98.

[3] Csokor. Ueber mastitis botryomycotica. Tagelb. d. Notarforse, 15.

[4] Immelmann. Botryomyces im Euter einer Kuhe. Arch. f. Thierheil., tome xix., 1893, page 103.

the parasite can be found. Four cases have been seen by Rasmussen and Bang, Harms, Jensen, Johne, Erhardt,[1] Williamson,[2] and Korewaar,[3] Maxwell found eight separate centres in the udder of a cow.

B. Sow.—Bang in three months saw fifty-two cases, and Hertwig mentions one in which not only were all the glands attacked, but several of the lumbar vertebræ also.

The tumours in the earlier stages may be mistaken for adeno-fibromata or sarcomata, and are recurrent. Usually the middle teats are involved, commencing with induration of the base, but as a rule the inguinal glands are not implicated.

On section the lesions of the gland consist of a white fibrous tissue, studded with cellular patches of a yellowish grey colour, irregularly rounded and well delimited, standing out above the cut surface, varying in size from a hemp-seed to a hazel-nut. Sometimes they are softened and broken down, the pus containing a large number of sulphur yellow seed-like particles, that are characteristic of actinomycosis.—(Hamoir.)[4]

In such cases surgical interference is called for, the operation being the same as in the bitch, but it is advisable also to remove the two neighbouring glands as well, to prevent recurrence. A tampon of cotton wool, with tincture of iodine, should be placed in the wound, and the lips sutured over it, which can be removed in forty-eight hours.

C. Mare.—Only one case is reported by Schöneck; the symptoms were the same as in botryomycosis. On microscopic examination the parts least affected show all the appearances of chronic interstitial mastitis. In the neighbourhood of the parasite the glandular structure is displaced by fatty degeneration.—(Müller.)[5]

MAMMARY TUBERCULOSIS.

The first good description of mammary tuberculosis was given by Funfstuck in 1870, but since then this phase of the disease has been well recognised. Amongst the most interesting observations are those of Franck and Bang, who in a very short time saw twenty-one cases. Hesse and Ernst,[6] Johne, Carsten Harms, May, Stüys Fiorentini,[7] Nocard,[8] Smith, Ostertag,[9] and Knuth,[10] who has published an interesting case illustrated with photographs.

Nocard records three cases of tuberculous mastitis in fifty-four in which it was general. Kunhau saw 119 cases in the abattoir at Lunguts out of 17,202 cows. In Saxony mammary tuberculosis

[1] Erhardt. Schweizer Archiv, April 1896.
[2] Williamson. Veterinary Journal, 1899.
[3] Korewaar. Tijdsch. voor veartsenig, 3 aflescurig, 1896.
[4] Hamoir. Ann. de méd. vét., May 1898, page 251.
[5] Müller. Münchener medicin. Wochensch., 1894, page 1027.
[6] Ernst. New York Medical, 1889, page 756.
[7] Fiorentini. L'allevatore, November 1894.
[8] Nocard. Mamm. tuber. Soc. cent., 30th December 1896.
[9] Ostertag. Zeitsch. f. Fleisch und Milch., 1899, page 53.
[10] Knuth. Zeitsch. f. Fleisch und Milch., 1900, page 168.

was common in the proportion of about 3 per cent. of tuberculous animals slaughtered from 1888 to 1896, and in the whole of Germany 6 per cent.[1]

Bang gives it as his opinion that many cases are not noticed.

Symptoms. — Funfstuck gives the following description of tuberculous mastitis :—"The milk goes off, and the mammæ gradually get harder, without any inflammatory symptoms, until they resemble a stone. The animals, at first healthy, get thinner and thinner, but with the local lesion I have always noticed generalised tuberculosis.[2]

This description is the same as was given by Franck in 1875 and by Bang, who is of opinion that at the commencement of the attack there is little alteration in the general state of the health. The tumefaction, however, gets gradually harder, and in the earlier stages there is no alteration in the character of the milk. After a time it gets thick and yellow, but never purulent, which seems to differentiate it from streptococcic mastitis. Storch has analysed tubercular milk, and found it deficient in sugar, fat, phosphorus, and lime salts, but rich in soda and albumen.

If the hind quarters are affected the corresponding supra-mammary glands are hypertrophied. The lesion may be local or associated with systemic tuberculosis, and terminates in extreme emaciation, the animal dying in two to four months.

We have seen two cases in the clinic of the Lyons Veterinary College presenting all the appearance of parenchymatous mastitis with suppression of milk, general hypertrophy of the quarter, which was hard and swollen, the supra-mammary glands being involved.

In one case the animal had been treated for fifteen days without any result, the nature of the disease not being recognised. She was then slaughtered as she had become greatly emaciated. On post-mortem examination she was found to be affected with general tuberculosis, and that almost the whole of the structure of the gland was involved.

The milk from the affected quarters is dangerous. Bang reports two cases of infection by injection, one in a calf and the other a woman. In the latter case a child who was fed on the same milk from a cow with a tuberculous udder died in about six months. There are also numerous other cases reported.

Etiology.—In the majority of cases the gland is primarily affected through the current of blood,[3] and it either coincides or is secondary to tuberculosis of other organs.

In one case we came across mammary tuberculosis in a sow, although it could not be detected elsewhere. One gland alone was involved, being turned into a fibrous mass studded over with tubercles, which reproduced the disease in a guinea-pig.

[1] Martel. La tuberculose et l'hygiène alimentaire. Presse Médicale, 22nd September 1900.

[2] Fünfstück. Bericht ub. Veterin. in Sachsen, f. 1870.

[3] In 119 tuberculous animals Lungwitz states that in all the cases in which he saw tuberculous mastitis there are other organs affected.

VETERINARY BLACK LIST.

AT a meeting, held on March 29, of the Diest Veterinary Medical Society, Belgium, in conjunction with the Charleroi Veterinary Medical Society, it was resolved to compile a black list of non-paying clients for the use of the members, and to invite the other Belgian Societies to co-operate.

The plan seems an excellent one and worthy of imitation by the profession in this country. The process is perfectly legal, in fact Stubbs' and Perry's Gazettes are both well known and in extensive use in mercantile and trading communities, and might be made use of by veterinary surgeons. Either of these publications would be much more efficient than a list circulated round the members of a small profession, as if the name was inserted in Stubbs or Perry, not only would credit be stopped with the veterinary surgeons, but the butcher, the baker, and candlestick maker also. Our Belgian confreres' plan seems worthy of trial with non-paying clients, and is absolutely safe as far as a libel action is concerned. It may be said that a client would be lost, but such a one we would part with without much regret.

Legal News.

MEDICO-LEGAL.

THE MULTIPLICATION OF DOOR-PLATES.

C. W. B.—THE rule is that medical practitioners should not affix name-plates upon houses where they have no tenancy, except in wide-spreading districts where it may be necessary for them to indicate houses at which messages may be left for them. There seems to be no reason of the kind to justify our correspondent in doing so.

GIFTS TO PARTNERS.

"Card" asks what is usual under the following circumstances where medical practitioners are in partnership:—(*a*) If a present is made to one of the partners by a patient? (*b*) If the present takes the form of a cheque? (*c*) Where a legacy is left to one of the partners? (*d*) Where a larger amount is paid than charged by the firm, the surplus being sent as a mark of gratitude?

*** (*a*) Where presents are made in kind it is usual for the partner to whom they are sent to retain them himself. (*b*) Where the present takes the form of cash, he can only do so with the consent of his partner. (*c*) Legacies usually go to the legatee only, but this ought to be laid down in the deed of partnership. (*d*) This is governed by the answer to (*b*).

PURCHASE OF A PRACTICE.

Purchaser asks: In purchasing a practice (1) is the price to be based on the gross receipts, without deductions? (2) Is it usual to pay cash down or by instalments? (3) What is to be considered a reasonable introduction?

*** (1) The basis of price is the gross receipts. (2) The price is

usually paid by instalments. One and a half years' purchase would be in the case of many practices a fair value. (3) This would depend on the character of the practice. A longer time would be required in the case of good class practice than in the case of a middle or poor class practice.

AGREEMENTS NOT TO PRACTISE WITHIN AN AREA.

H. B. asks whether it is usual in a dissolution of partnership for the outgoing partner to sign an agreement not to practise either as a principal, *locum tenens*, or assistant, within a certain radius for a given time. He has no objection to signing with regard to principal or assistant, but he objects to being deprived of the chance of acting as *locum tenens*.

*** Such an agreement is usual. The remaining partner might reasonably object to the outgoing acting as *locum tenens* to a rival practitioner within the prescribed area.

"Threatened" writes that he has dissolved partnership, and under the deed of dissolution it is agreed that the outgoing partner shall not practise within a radius of three-quarters of a mile of his residence. He now threatens to take a house just outside the three-quarters of a mile, and practise as before.

*** The outgoing partner may take a house outside the above limit and practise there, but he may not visit any patient within the prescribed area, or accept any medical appointment necessitating his so doing. In event of violation of these conditions our correspondent can bring an action against him for damages, and obtain an injunction to restrain him from continuing such unlawful conduct.

(*British Medical Journal*, June 20th, 1903.)

HEWINSON *v.* THE RURAL DISTRICT COUNCIL OF CHELTENHAM.

At Gloucester, last week, Mr. Justice Bruce, with a special jury, tried the cause of "Hewinson *v.* The Rural District Council of Cheltenham."

Mr. Cranstoun and Mr. F. W. Sherwood were for the plaintiff; Mr. Amphlett, K.C., and Mr. H. Lewis for the defendants.

Mr. James Thomas Hewinson, tenant of Shurdington Farm, asked for an injunction restraining the defendants from managing a sewage farm at Great Shurdington in such a way as to pollute the Ham (or Hatherley) brook, which flows between the sewage farm and the plaintiff's fields; he also claimed damages for the loss of two mares, whose deaths were alleged to have been caused by drinking the water so polluted. In 1899 the sewage farm was begun upon a system which was allowed to be a good one; but the plaintiff's case was that there were original defects in the joining of the pipes, and that the scheme of irrigation by which the sewage was to be distributed over six acres of field was not carried out; the crude sewage was carried directly into the brook, and in the dry weather of July of last year, when there was hardly any flow of water in the brook, stagnant pools of sewage were formed along the banks. The mares, according to the plaintiff's evidence, were taken ill in July; and the first, in the opinion of two veterinary surgeons, suffered from *purpura hæmorrhagica*, and the other was said to have died of a disease akin to enteric; both diseases are due to microbes such as would be likely to be found in stagnant sewage.

This view was challenged by the defendants, who set up the theory that the symptoms were like those of strangles, an infectious disease common among horses. A great number of witnesses were called to say that horses and cattle are accustomed to drink sewage water with impunity, and appear to prefer it very often to pure water; it was alleged that no instance was known to have occurred of horses dying from diseases contracted in the way suggested by plaintiff's witnesses. The defendants also set up that the action would not lie, inasmuch that section 299 of the Public Health Act, 1875 (38 and 39 Vict. c. 55), provides a remedy in such a case by means of complaint to the Local Government Board; and that, therefore, a right of suing in the courts is impliedly taken away. His Lordship overruled the contention. The defendants further pleaded that they had granted in December 1901 a lease of the sewage farm to Miss Elizabeth Sadler Wells, and that by the terms of the lease the duty of carrying out the system of irrigation was transferred to her. It appeared that she had granted a sub-lease to one Burrows; and the plaintiff's evidence went to show that Mr. Burrows, in raising a hay crop, found it inconvenient to carry out fully the prescribed arrangements for distributing the sewage.

The learned judge referred to the terms of the lease, which showed that the defendants retained in their own hands the control and supervision of the sewage farm, and had a right of entry and a right to terminate the tenancy in the event of the occupant not carrying out the directions of the officials of the council. His Lordship held that the defendants could not escape from their liability by granting a lease. In summing up, he said the question was not whether horses preferred foul water to fresh water, a matter about which he did not think that everybody would agree with the defendant's witnesses; the issue was whether the horses were shown to have died as the result of drinking sewage water which had come upon their owner's ground through the mismanagement of the defendants.

The jury, after considerable deliberation, found a verdict for the plaintiff, with damages £89 9s. The plaintiff's counsel admitted that the sewage farm is now being managed in a proper way, and the claim for an injunction was given up. The jury added to their verdict this rider:—"That the control of sewage should not be let out of the hands of the responsible governing bodies." His Lordship said the recommendation of the jury would be conveyed to the proper quarter.—*Times*, July 8th, 1903.

This case is an important one, and dispels the prevalent notion that any water is good enough for animals, and, indeed, as the defendants attempted to prove, that they prefer contaminated to pure.

At present we are in the dark as to the precise effects of sewage on animals, but we think there is little doubt that some of the outbreaks of obscure diseases may be traced to this cause. Abortion is known to be caused by it,—*vide* Report in Journal of Royal Agricultural Society by Mr. Stevens, of Newcastle-on-Tyne. We also heard of a case a year ago in which it was alleged that suppurative arthritis in foals was caused by sewage contamination, but the matter was compromised out of court. With the extension of sewage farms for the disposal of refuse from towns, such cases are bound to become more frequent, and we hope that those practitioners who are in a position to do so will record their experiences, as at present there is a great dearth of authenticated cases.

GARNISHEE ORDER.

RECOVERY of a debt by means of a "Garnishee Order" is a legal process but little known to laymen, or indeed to every lawyer, but in certain cases it is a most effective method of recovering money. For instance, A owes B £20, which B is unable to get, and furthermore, B knows A has not got it, or goods enough to satisfy an execution. Also it might happen that for some reason B does not wish to levy an execution on A. B then sues A, "if under £50 in the County Court, but if over he will have to go to the King's Bench," and obtains a judgment. B is now a judgment creditor, A a judgment debtor. The next step would be to levy an execution on A's goods, but this B does not wish to do, or A has no goods. B, having his judgment, waits and learns that C holds monies of A's, "as in the case of C being a bank," or C owes A monies, such as the price of a horse, and acknowledges that it is A's monies. B now applies to the court for a "Garnishee Order" on C which *subpœna* orders C, to pay out of A's monies he holds up to £20 into Court, in satisfaction of B's debt. If C holds over £20 of A's he only pays that amount in, but if under £20, all he holds, and B can apply for another Garnishee Order at any future date.

It is necessary, however, first to take the case into Court and obtain a judgment, and the judgment must not be allowed to lapse, but renewed, which, however, is seldom necessary in practice.

In certain cases this process is convenient for the recovery of small debts when the debtor has no goods but has cash, as it avoids the expense and delay of filing a petition in bankruptcy. Traders who are aware of this method of procedure often keep a customers' cheque book—that is, a book in which the names of customers paying their account by cheque are entered, with the name of the bank on which the cheque is drawn, and the date. They are often by this enabled to tell where a debtor has monies..

In applying for the "Garnishee Order" B must satisfy the Court that it is reasonable to think that C holds monies of A's, as the Court will not grant such orders without good cause. This can be done by affidavit.

A DOG'S PEDIGREE.

IN the Sheffield County Court lately the purchaser of a dog sought to recover damages suffered owing to the vendor's refusal to supply a pedigree with the animal. The judge, not being satisfied that the former owner of the dog had agreed to supply a pedigree, non-suited the plaintiff, and the important lesson for the public is to recognise the fact that there is no obligation on the part of a vendor to give a pedigree, and that in cases where it is required a definite argument must be come to on the point.

(*Country Life*, 11th July 1903, page xlii.)

POISON IN MANURE.

AT the Southwark County Court, his Honour Judge Addison, K.C., gave judgment yesterday in the action of Roberts *v.* Elliott, which was a claim by Robert James Roberts, a farmer of Hartfield, Sussex, against Thomas

Elliott, a manure merchant, of Rotherhithe, for £36, os. 6d. damages for breach of contract in supplying litter which was unfit for the purpose for which it was purchased. Mr. Watson Moyses was counsel for the plaintiff, and Mr. Scarlett for the defendant. The plaintiff's case was that he bought several loads of "long manure" or litter from the defendant, free from glass, to be laid down in his yard, to which the cattle had access. A sow was taken ill from lead poisoning and died, and later he lost two beasts from the same cause. A search of the manure revealed a quantity of lead paint rags and cotton waste, the linseed oil having attracted the cattle, and induced them to chew the poison. In the course of an exhaustive judgment, Judge Addison said he must find as a fact that there was no negligence on the part of the defendant in allowing the poisoned rags to be collected with the litter, and he was confirmed in that view because the plaintiff, who had a much better opportunity of discovering the foreign matter, did not do so. But under section 14 of the Sale of Goods Act the defendant was liable, as there was an implied condition that the stuff was reasonably fit for the purpose for which it was sold. The defendant had given an implied warranty, and had committed a breach of it by supplying what he did. He therefore had to give judgment for the plaintiff for £36, os. 6d., with costs.

(*Times*, August 5th, 1903.)

This case is one illustrating the doctrine of implied warranty. Section 14 of the Sale of Goods Act, 1893 (56 and 57 Vict., chapter 71), provides that, subject to the provisions of this Act, and of any statute in that behalf, there is no implied warranty or condition as to the quality or fitness for any particular purpose of goods supplied under a contract of sale, except as follows:—

1. Where the buyer, expressly or by implication, makes known to the seller the particular purpose for which the goods are required, so as to show that the buyer relies on the seller's skill or judgment, and the goods are of a description which it is in the course of the seller's business to supply (whether he be the manufacturer or not), there is an implied condition that the goods shall be reasonably fit for such purpose, provided that, in the case of a contract for the sale of a specified article under its patent or other trade name, there is no implied condition as to its fitness for any particular purpose.

2. Where goods are bought by description from a seller who deals in goods of that description (whether he be the manufacturer or not), there is an implied condition that the goods shall be of merchantable quality, provided that, if the buyer has examined the goods, there shall be no implied condition as regards defects which such examination ought to have revealed.

3. An implied warranty or condition as to quality or fitness for a particular purpose may be annexed by the usage of trade.

4. An express warranty or condition does not negative a warranty or condition implied by this Act unless inconsistent therewith.

The maxim *caveat exemptor* generally applies as to the quality of goods sold, and, unless there is an *express* warranty, there is none, but a warranty is implied in the following cases:—

1. When the goods are sold by a trader *for a particular purpose*, of which he is well aware, *e.g.*, "copper for sheathing a ship," so that the

buyer necessarily trusts to the judgment or skill of the seller, they must be reasonably fit for the purpose.[1]

2. A case often referred to is Biggs *v.* Parkinson,[2] where a provision dealer had undertaken to supply a troop ship with stores for a voyage to Bombay guaranteed to pass the survey of certain officers, but with no warranty of their being fit for the purpose. It was held, however, that in spite of the guarantee that such a warranty must be implied.

3. But in the case of the sale of meat in a market which the buyer inspects and selects himself, there is no implied warranty of fitness for human food.[3]

4. In the absence of usage, there is an implied contract by a manufacturer who sells goods that they are of *his own make*, so that he would not be justified in supplying equally excellent articles made by some other manufacturer.[4]

By the Fertilizers and Feeding Stuffs Act, 1893 (56 and 57 Vict., chapter 56, sections 1 and 2), the invoice which the seller of manufactured or artifically prepared fertilizers or feeding stuffs is now bound to give to the purchaser is declared to have effect as a warranty of the statements contained therein, and also on the sale of any article for use as food for cattle there is implied a warranty by the seller that the article is suitable for feeding purposes.

Reviews.

UNITED STATES DEPARTMENT OF AGRICULTURE.—EIGHTEENTH ANNUAL REPORT OF THE BUREAU OF ANIMAL INDUSTRY FOR THE YEAR 1901.

The Annual Report of the Bureau of Animal Industry of the United States Agricultural Department for the year 1901, a well got-up volume of 679 pages, handsomely bound and illustrated, has just come to our hands. It is a perfect storehouse of information for farmers, veterinary surgeons, and all who have to deal with the domestic animals.

We regret that we are unable to devote sufficient space to do it the justice it deserves. All that we can do is to give a list of its contents, and make a few brief remarks on some of the most striking points.

1. Emergency Report on Surra. By D. E. Salmon, D.V.M., and Ch. Wardell Stiles, Ph.D.

Chiefly deals with surra in the Philippine Islands, where it decimated the horses of the American Army during the Spanish war. The authors acknowledge the reports of Veterinary Surgeon G. Evans, M.D., and Dr. Lingard.

2. The Significance of the recent American Cases of Hook-Worm Disease (*Uncinariasis* or *Anchylostomiasis*) in Man. By Ch. Wardell Stiles, Ph.D.
3. Frogs, Toads, and Carp (*Cyprinus carpio*) as Eradicators of Fluke Disease. By Ch. Wardell Stiles, Ph.D.

It appears that Mr. William Ashmead, of the United States National

[1] Jones *v.* Bright, 1829, 5 Bingham, 533.
[2] 1862, 7 Hurlstone & Norman, Exchequer 955.
[3] Emmerton *v.* Matthews, 1862, 7 Hurlstone and Norman, 586.
[4] Johnson *v.* Raylton, 1881, 7 Queen's Bench Division, 438.

Museum, when on a visit to the Hawaiian Islands, learned that frogs and toads had been introduced on to fluke-infected land, with a view to devouring the snails that act as the intermedial hosts of the parasites, with good results, for Ernest Hutchinson, an inspector of the Bureau of Animal Industry, stationed at Portland, Oregon, also noticed a decrease of fluke disease when carp had been introduced into the waters in an infected district, especially along the banks of the Columbia River, where formerly about 75 per cent. of the cattle were affected, and now not 5 per cent. are.

Mr. A. E. Gebhart, secretary to the Oregon Fish Commission, likens the feeding habits of the carp to a pig, saying they will eat anything that is eatable in the way of vegetation along the edges of sloughs and on the meadows at the time of floods. They also root about in search of roots, and such animal life as may be within their reach. They also eat all sorts of small molluscs and crustaceans.

These observations have been confirmed from other States, and it seems that the introduction of carp into infected districts is followed by a great decrease in fluke disease.

4. Further Investigations on Verminous Diseases in Cattle, Sheep, and Goats in Texas. By Ch. Wardell Stiles, Ph.D.
5. "Big Head" in Sheep in Utah. By H. M. Rowe.
6. Blood-Poisoning (Malignant Œdema) in Sheep and Lambs in New Zealand. By J. A. Gilruth, M.R.C.V.S.
7. Federal Inspection of Foreign and Interstate Line Shipments of Live Stock. By D. E. Salmon, D.V.M.
8. Food Products from Diseased Animals. By D. E. Salmon, D.V.M.
9. Tuberculosis of Animals in some of its Relations to Human Tuberculosis. By D. E. Salmon, D.V.M.
10. The Cattle Industry of the United States. By James Wilson. Some valuable statistics are given.
11. Lamb Feeding in Colorado. By Lowell Clarke, D.V.S.
12. Cattle Markets and Abattoirs in Europe. By Henry Alvord, C.E.

The author visited Berlin, Budapest, Halle, Hamburg, Liverpool, London, Mannheim, Paris, and Rotterdam. He gives a detailed description of the great Paris market at La Villette and Mannheim in Germany, and some excellent photographs and plans of the latter. The whole chapter is of the greatest interest to all connected with meat inspection, and if space permitted we would print it *in extenso*.

13. The Dairy Industry and Dairy Markets of Porto Rico, with Notes upon St. Thomas and Cuba. By R. A. Pearson, M.S.

The author was sent by the American Government to inquire into this industry in their new possessions. The report is a fair example of American push and earnestness that might well be followed by us.

14. Statistics of Oleo-Margarine, Oleo-Oil, and Filled Cheese, 1900 and 1901. By R. A. Pearson, M.S.
15. The Business of Breeding Pure-Bred Stock. By John A. Craig, B.S.A.

Sound advice is given on farming a herd or flock, and the author points out it costs no more to keep a good than a bad animal, and that unless money is spent returns cannot be expected.

16. Market Classes of Horses. By George M. Rommel, B.S.A.

From a veterinary surgeon's point of view, this is perhaps the most interesting chapter in the whole report. The author states that the horse

trade was never on a firmer basis, and says—"Dealers cannot satisfy the demands that come to them for *high-class* roadsters, coach horses, and saddlers." We have lately heard many prophecies that in ten years the horse will be *non est*, and with him the veterinary surgeon, from the introduction of electric traction, bicycles, and motor cars, and it would appear that exactly the same happened in America twelve years ago. Space prevents us going into details, but we make the following quotation :—"The most effective force for furthering the downfall in prices was simply fright, which brought about an unnecessary unloading of horses on a market already over-supplied. Again, experience with automobiles has shown that in their present state of development their effect on the horse market is not serious. For business purposes they have not yet been found to be entirely satisfactory. At present the 'auto' is the least dangerous of all the deterring influences that operate against the horse market."

There are numerous photos of different classes of horses; one of a hunter shows an animal seeming to be able to hold his own in any English country, and to which Americans are giving attention. Indeed last season we saw more than one American horse performing well in the Vale of Aylesbury, a country that is by no means an easy one to get across.

17. The Angora Goat Industry—
    Progress of the Angora Goat Industry in 1901. By George Fayette Thompson.
    Mohair and Mohair Manufacturers. By George Fayette Thomp son.
    The Angora Goat Industry of Asia Minor. By Willard C. Bailey, M.D.

The growth of the Angora goat in America has taken place since 1890, particularly in Winconsin and Michigan. In these States the forests were cut for timber, and it not paying to pull out the stumps, the land was overrun with bush, thousands of acres being rendered valueless. It was found that the goat would clear this away at little or no expense, and in these States, through their agency, large tracts of land have been brought under cultivation, producing profitable crops. Prices run high, does from £2 : 10s. to £6 : 5s., but a prize buck at Kansas City fetched £260. The chapter is profusely illustrated both with photos of the goats in America and Asia Minor, and also with coloured drawings of the manufactured mohair into fabrics.

18. The Musk Ox. By George Fayette Thompson.

Specimens have been brought back from the Arctic, and an attempt is being made to breed them in the States.

19. American Breeds of Fowls. By T. F. M'Grew. Well illustrated with numerous coloured plates.
20. A Variety of the Hog Cholera Bacillus, which closely resembles Bacillus Typhosus. By M. Dorset, M.D.
21. Note on the Bronchial Forms of Tubercle Bacillus found in Cultures. By M. Dorset, M.D.
22. Use of Eggs as a Medium for the Cultivation of Bacillus Tuberculosis. By M. Dorset, M.D.
23. Virulence of the Bovine Tuberculous Bacillus for Monkeys. By E. A. de Schweinitz, Ph.D., M.D., and E. C. Schroeder, M.D.V.

24. Results of the Work against Sheep Scab in 1901. By D. E. Salmon, D.V.M, and Ch. Wardell Stiles, Ph.D.

The dips used were nicotine and sulphur, tobacco and sulphur, and lime and sulphur, and as far as curative properties go they are equal, but lime and sulphur injure the wool unless carefully used.

25. Contagious Diseases of Animals in Foreign Countries.
26. Miscellaneous Information.
27. Imports and Exports of Animals and Animal Products. By John Roberts.
28. Numbers and Values of Farm Animals in 1900.
29. Wool Statistics in 1900.
30. Park Packing in the United States.
31. Live Stock and the Markets.
32. Rules and Regulations of the Bureau of Animal Industry issued in 1901.

We must confess that we cannot help contrasting this well got-up volume, containing a fund of both practical and scientific information, with the Report of our own Animals Division of the Board of Agriculture that is on our table, and wonder if some of the officials might not take a lesson from over the Atlantic.

Higher Preliminary Education of Veterinary Students in Belgium.

L'Etoile Belge has an interesting article on the veterinary profession. The author reviews the progress of veterinary science, the reports of the teaching veterinary schools, their programme and regulations for entrance, and makes mention of the latest improvements, pointing out that 600,000 francs have been spent at Alfort.

The Bavarian Government have this year provided, in their budget, 500,000 francs for improvements in the Munich school. He goes on to say:—"The great and progressive developments of veterinary science have rendered a higher standard of preliminary education necessary for young men who desire to enter the schools. In France the number of students is limited, and candidates before admission to the entrance examination must be in possession of the degree of Bachelor of Arts also in Germany. With us (Belgium) the diploma of candidate in science has for several years been required from those desirous of becoming veterinary students. It was said that these requirements would empty the schools, and especially in Germany this fear for a long time prevented these regulations from coming into force, but this has not been the case. With us (Belgium) the schools have never been so full, and those who have thought otherwise now confess they were mistaken.

Correspondence.

EPIZOOTIC LYMPHANGITIS.

To the Editor of the Veterinary Journal.

Sir—In the May issue of your journal, Vet.-Captain R. H. Holmes, A.V.D., concludes a report of one or two cases of lymphangitis epizootica

by saying—"All the cases from which those photographs were taken had been under treatment for a long time, and were destroyed as being incurable."

Since being attached to the A.V.D. in 1899, and during my connection with the South African Constabulary, some scores of these cases have come under my treatment. For a long time I persevered with pot. iodide and iodine in almost every form, given intratracheally and by the mouth, but with little success. After trying hydrarg. biniod. rub., I found that this drug proved to be a specific for this most obstinate complaint, and have never known it fail to effect a cure.

Commencing with seven grains daily, giving half this amount twice a day, per orem, on the tongue, the dose has gradually been increased, till at the end of the month the animal is getting fifteen grains daily.

As a rule a bad case will be completely cured in from two to three months' time. The application of external remedies I have found of little value, although in some cases ung. hydrarg. biniod. rub. has been useful. Several cases treated in this way have been particularly noted as to the after-effects of the mercury and the recurrence of the complaint, and in no instance have I found any ill effects from the use of so big a dose of the drug, or any reappearance of the disease.—I am, Sir, your faithfully,

ARCHD. HODDER,
Lieut. S.A.C., M.R.C.V.S.

S.A.C. Veterinary Hospital,
Sydenham, Bloemfontein, O.R.C.,
30/6/03.

Obituary.

WE regret to record the death of Professor Edmond Nocard, the eminent French veterinary surgeon.

Edmond Isidore Etienne Nocard died on August 2nd, after three weeks' suffering, at No. 31 Grande Rue St. Maurice. His funeral took place on August 5th, and was largely attended.

He was the son of a timber merchant and was born on January 29th, 1850, at Provins (Seine et Marne). He was educated at the Municipal College of his native town, and entered the Alfort School October 1868, and received his diploma in August 1873, passing out at the top of the class. The outbreak of the Franco-German War interrupted his studies at the end of the second year, and on 6th September 1870 he joined the 5th Lancers as a private, rising to the rank of sergeant.

On the termination of the war he resumed his studies, and on 6th November 1873 he was appointed chief of the Clinic at Alfort, which post he held till 25th November 1878, when he was elected Professor of Pathology and Clinical Surgery.

On the retirement of M. Goubaux, on 17th August 1887, he was appointed Director of the Alfort School and Professor of Contagious Diseases, Sanitary Police, and Jurisprudence. On 3rd January 1891 he resigned the appointment of director, as it interfered with his investigations and scientific work, but retained his professorship. He was nominated Chief of the service of the Pasteur Institute, and was a member of many scientific and public bodies, of the Committee of Public Hygiene of France, the Council of Agriculture, the Central Epizootic Committee, the Committee of the French Veterinary Schools, the Committee of Public

Health of the Department of Seine, and the Central International Tuberculosis Committee, &c. He was a member of the Egyptian Cholera Commission of 1883, and visited many foreign countries as an expert at the request of the various Governments, amongst others, the Argentine and Ireland.

He had been a Member of the Academy of Medicine since 1886, General Secretary to the Central Veterinary Medical Society, Member of the Biological Society, and President of the Central Veterinary Association.

An Officer of the Legion of Honour, Officer of Public Instruction, Commander of the Order of Merit in the Department of Agriculture, Commander of the Order of Leopold of Belgium, and Commander of the Order of Maurice and Lazares of Italy.

M. Nocard married, in 1875, a daughter of Dr. Jonas, but his wife died in less than a year after marriage.

His best known works are "Animal Tuberculosis," and "Microbian Diseases of Animals," which he wrote in collaboration with M. Leclainche, and a third addition of which has been published this year in two volumes. He also wrote several articles for "Bouley's Veterinary Dictionary," and numerous contributions to the various professional periodicals.

[We have extracted most of the above information from the *Récueil de Médecine Vétérinaire* of 14th August, and as it is very full, we do not propose to say anything further on M. Nocard's career, but we cannot refrain from recording our personal admiration for the great Frenchman who has just passed away. Whilst studying at Alfort we had the immense advantage of seeing M. Nocard operate on many important occasions. Never did any man show more of what the French themselves call *aplomb*. It was impossible to upset M. Nocard's equanimity or take him unawares. He was always calm, self-possessed, dignified. Before commencing a difficult and dangerous operation he would quietly roll up and light a cigarette, and this he held between his lips, puffing quickly at intervals, till the operation was finished. His operations were always performed quickly, quietly, and gracefully. There was no hurry, but there was amazing quickness and absolute precision. M. Nocard was a most skilful surgeon and a most refined and courteous gentleman.—Ed. V. J.]

Communications, Books, Journals, &c., Received.

Agricultural Journal (Cape of Good Hope); Berliner Thierärztliche Wochenschrift; La Clinica Veterinaria (Milan); Deutsche Thierärztliche Wochenschrift; Tannoform in Veterinary Medicine (March); The Sanitary Journal; Scottish Medical and Surgical Journal; Veterinary Record; La Riforma Veterinaria; Le Mois Scientifique (Paris); L'Echo Vétérinaire (Liège); Annales de Médecine Vétérinaire (Brussels); Johns Hopkins Hospital Reports; Journal of Comparative Medicine and Veterinary Archives; Recueil de Médecine Vétérinaire; Gazette Médicale de Paris; Modern Medicine; Johns Hopkins Hospital Bulletin; Il Veterinario di Campagna (Moncalieri); Le Bulletin Vétérinaire (Orleans); Revista de Medicina Veterinaria (Bucarist); La Revista Veterinaria (Buenos Aires); Zeitschrift für Fleisch-und Milchhygiene (Berlin); Buletinul Societatii de Sciinte diu Bucuresci-Romania; The Meat Trades Journal; The Dental Record.